



NIST

United States
Department of
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Institute of
Standards and
Technology

REPORT OF THE 80TH
NATIONAL CONFERENCE
ON WEIGHTS AND
MEASURES



as adopted by the 80th
National Conference on
Weights and Measures 1995

NIST Special Publication 894

1996



Report of the 80th National Conference on Weights and Measures

Sponsored by the National Institute of Standards and Technology (NIST)

Attended by Officials from the Various States, Counties, and Cities, and
Representatives from U.S. Government, Industry, and Consumer Organizations

Portland, Maine, July 16-20, 1995

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Technology

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NIST
Special Publication **894**

February 1996

Abstract

The 80th Annual Meeting of the National Conference on Weights and Measures (NCWM) was held July 16 through 20, 1995, at the Holiday Inn By the Bay, Portland, Maine. The theme of the meeting was "Quality Partnerships and Programs through Education."

Reports by the standing and annual committees of the Conference comprise the major portion of this publication, along with the addresses delivered by Conference officials and other authorities from government and industry.

Special meetings included those of the Metrologists, the Associate Membership Committee, the Retired Officials Committee, the Scale Manufacturers' Association, the American Petroleum Institute, the Industry Committee on Packaging and Labeling, the regional weights and measures associations, and the National Association of State Departments of Agriculture Weights and Measures Division.

Key words: grain moisture; legal metrology; motor-fuel dispensers; safety; scales; specifications and tolerances; training; type evaluation; uniform laws and regulations; weights and measures.

Library of Congress Catalog Card Number 26-27766.

Note: The policy of the National Institute of Standards and Technology is to use metric units of measurement in all of its publications; in this publication, however, recommendations received by the NCWM technical committees have been printed as they were submitted and, therefore, may contain references to inch-pound units. Opinions expressed in non-NIST papers are those of the authors and not necessarily those of the National Institute of Standards and Technology. Non-NIST speakers are solely responsible for the content and quality of their material.

Natl. Inst. Stand. Technol. Spec. Publ. 894, 303 Pages (Feb. 1996)
CODEN: NSPUE2

U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON: 1996

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Past Chairmen of the Conference

CONFERENCE	YEAR	CHAIRMAN
43rd	1958	J. P. McBride, MA
44th	1959	C. M. Fuller, CA
45th	1960	H. E. Crawford, FL
46th	1961	R. E. Meek, IN
47th	1962	Robert Williams, NY
48th	1963	C. H. Stender, SC
49th	1964	D. M. Turnbull, WA
50th	1965	V. D. Campbell, OH
51st	1966	J. F. True, KS
52nd	1967	J. E. Bowen, MA
53rd	1968	C. C. Morgan, IN
54th	1969	S. H. Christie, NJ
55th	1970	R. W. Searles, OH
56th	1971	M. Jennings, TN
57th	1972	E. H. Black, CA
58th	1973	George L. Johnson, KY
59th	1974	John H. Lewis, WA
60th	1975	Sydney D. Andrews, FL
61st	1976	Richard Thompson, MD
62nd	1977	Earl Prideaux, CO
63rd	1978	James F. Lyles, VA
64th	1979	Kendrick J. Simila, OR
65th	1980	Charles H. Vincent, TX
66th	1981	Edward H. Stadolnik, MA
67th	1982	Edward C. Heffron, MI
68th	1983	Charles H. Greene, NM
69th	1984	Sam F. Hindsman, AR
70th	1985	Ezio F. Delfino, CA
71st	1986	George E. Mattimoe, HI
72nd	1987	Frank Nagele, MI
73rd	1988	Darrell A. Guensler, CA
74th	1989	John J. Bartfai, NY
75th	1990	Fred A. Gerk, NM
76th	1991	N. David Smith, NC
77th	1992	Sidney A. Colbrook, IL
78th	1993	Allan M. Nelson, CT
79th	1994	Thomas F. Geiler, Barnstable, MA

State Representatives

The following designated State Representatives were present and voted on reports presented by the Conference standing and annual committees.

State	Representative	Alternate
Alabama	Larry Turberville	None
Alaska	Aves D. Thompson	None
American Samoa	None	None
Arizona	Sharon Rhoades	John Hays
Arkansas	Mike Hile	None
California	Darrell A. Guensler	Barbara J. Bloch
Colorado	David R. Wallace	None
Connecticut	Allan M. Nelson	Michael Dynia
Delaware	William Lagemann	None
District of Columbia	None	None
Florida	Max Gray	Eric Hamilton
Georgia	Jerry Flanders	Curtis Williams
Guam	None	None
Hawaii	None	None
Idaho	Jim Boatman	None
Illinois	Sidney A. Colbrook	Richard Philmon
Indiana	Larry J. Stump	Herman R. Hochstetler
Iowa	Darryl L. Brown	None
Kansas	Maureen Henzler	None
Kentucky	Danny Willis	Randy Wise
Louisiana	None	None
Maine	Clayton F. Davis	Stanley K. Millay
Maryland	Louis Straub	Richard Wotthlie
Massachusetts	Charles H. Carroll	None
Michigan	Edward C. Heffron	Michael Pinagel
Minnesota	Michael F. Blacik	None
Mississippi	None	None
Missouri	Roy L. Humphreys	None

State Representatives

State	Representative	Alternate
Montana	Jack Kane	None
Nebraska	Steve Malone	Richard Suiter
Nevada	None	None
New Hampshire	None	None
New Jersey	Joe Silvestro	None
New Mexico	Gary D. West	None
New York	John J. Bartfai	Ross J. Andersen
North Carolina	N. David Smith	Ronald D. Murdock
North Dakota	None	None
Ohio	James C. Truex	Barbara DeSalvo
Oklahoma	Charles Carter	Ken Fraley
Oregon	Ken Simila	None
Pennsylvania	Dean F. Ely	A. Courtney Yelle
Puerto Rico	José A. Torres-Ferrer	None
Rhode Island	None	None
South Carolina	None	None
South Dakota	Michael J. Mehlhaff	None
Tennessee	Robert G. Williams	Randy F. Jennings
Texas	Edwin J. Price	James H. Eskew
Utah	David McKay	None
Vermont	Bruce Martell	Phil Benedict
Virginia	J. Alan Rogers	G. Wes Diggs
Virgin Islands	None	None
Washington	Robert D. Arrington	None
West Virginia	Karl Angell	None
Wisconsin	Alan Porter	James Akey
Wyoming	None	None

National Conference on Weights and Measures Organization Chart 1994-1995

Executive Committee and NTEP Board of Governors (BoG)

Chairman: J. Truex, OH
 Chairman-Elect: C. Gardner, Suffolk Co., NY
 Past Chairman & Chairman, BoG: T. Geiler, Town of Barnstable, MA
 Acting Treasurer: J. Alan Roger, VA
 Members: B. Adams, MN (3)
 B. Bloch, CA (3)
 S. Colbrook, IL (1)
 C. Fulmer, SC (2)
 J. Alan Rogers, VA (1)
 A. Thompson, AK (2)

President: A. Prabhakar, NIST Director
 Executive Secretary: G. Ugiansky, NIST Office of Weights and Measures
 Technical Advisor: R. Bruce, Canada (Exec. Committee only)

Weights and Measures Coordinator:
A. Turner, NIST

See Working Groups and Annual Committees to the Executive Committee after the Standing Committees.

Laws & Regulations Committee

Chairman: S. Rhoades, AZ (1)
 Members: K. Angell, WV (5)
 R. Gunja, Kansas City, KS (4)
 S. Millay, ME (3)
 L. Straub, MD (2)

NIST Technical Advisors:

K. Butcher
 T. Coleman
 J. Koenig

Canadian
Technical Advisors:

G. Vinet
 G. Jorowski

Petroleum Subcommittee

Chairman: E. Hamilton, FL
 Technical Advisor: R. Jennings, TN

NIST Handbook 133 Working Group

Chairman: B. Bloch, CA
 Technical Advisor: K. Butcher, NIST

Specifications & Tolerances Committee

Chairman: R. Suiter, NE (1)
 Members: D. Brown, IA (5)
 R. Kelley, NYC, NY (3)
 R. Murdock, NC, (4)
 G. West, NM (2)

NIST Technical Advisors:

T. Butcher
 C. Cotsoradis

NIST Technical Staff:

J. Williams

Canadian
Technical Advisor: S. Roussy, Canada

Solid Volume Measuring Devices Working Group

Chairman: C. Skonberg, United Parcel Service
 Technical Advisor: N. Dupuis-Désormeaux, Canada

NCWM Organization Chart

<p>Education, Administration, & Consumer Affairs Committee</p> <p>Chairman: M. Gray FL (1) Members: B. DeSalvo, OH (2) R. Greek, San Luis Obispo, CA (5) B. Martell, VT (4) E. Price, TX (3)</p> <p>NIST Technical Advisors: T. Coleman J. Mindte</p> <p>NCWM Safety Liaison: C. Gardner, Suffolk Co, NY</p>	<p>Nominating Committee</p> <p>Chairman: T. Geiler, Barnstable, MA Members: D. Guensler, CA S. Malone, NE A. Nelson, CT G. Shefcheck, OR N. David Smith, NC L. Straub, MD</p>
<p>Program Evaluation Work Group</p> <p>Chairman: D. Guensler, CA Members: K. Fraley, OK S. Malone, NE A. Nelson, CT E. Price, TX M. Belue, Belue Associates W. Corey, American Frozen Foods R. St. John, PA Food Merchants Assn. T. Stabler, Mettler-Toledo R. Williams, TN</p> <p>Technical Advisors: J. Williams, NIST T. Coleman, NIST</p>	<p>Budget Review Committee</p> <p>Chairman: J. Truex, OH Members: N. David Smith, NC (1) D. English, Measurement Systems International (4) D. Guensler, CA (3) H. Lodge, Dunbar (2)</p> <p>C. Gardner, Suffolk Co., NY G. Ugiansky, NIST</p>
<p>Auditing Committee</p> <p>Chairman: J. H. Eskew, TX (1) Members: M. Hopper, Kern Co., CA (3) R. Kalentkowski, CT (2)</p> <p>Coordinator: J. Mindte, NIST</p>	<p>Credentials Committee</p> <p>Chairman: D. Ely, PA (1) Members: Cosmo Insalaco, Fresno Co., CA (3) A. McCoy, City of Columbus, OH (3)</p> <p>Coordinator: J. Mindte, NIST</p>
<p>Resolutions Committee</p> <p>Chairman: B. Martell, VT (1) Members: C. Fulmer, SC (1) W. Lagemann, DE (1) R. Philmon, IL (1) J. Bane, IA (3) C. Davis, ME (3) D. Wallace, CO (3)</p> <p>Coordinator: J. Mindte, NIST</p>	<p>Other Appointed Officers</p> <p>Parliamentarian: K. Simila, OR Chaplain: W. Lagemann, DE Assistant Treasurer: F. Clem, Columbus, OH</p> <p>Sergeants-At-Arms:</p> <p>D. Newcombe, ME C. Brown, ME</p>
<p>Other Elected Officers</p> <p>Vice Chairmen: F. Clem, Columbus, OH D. Ely, PA D. Guensler, CA D. Willis, KY</p>	<p>Associate Membership Committee</p> <p>Chairman: W. Corey, American Frozen Foods Vice Chair: R. Davis, James River Corp. Secretary: J. Colman, Food Marketing Institute Treasurer: T. Stabler, Mettler-Toledo Members: W. Braun, WHB Resources R. Fuehne, Ralston Purina C. Guay, Procter & Gamble G. Prince, The Kroger Co. D. Quinn, Fairbanks Scales P. Zalon, Nestle USA</p>

National Type Evaluation Technical Committee

(Reports to NTEP Board of Governors)

Weighing Sector

Chair: N. Mills, Hobart Corp.

Technical Advisor:

T. Butcher, NIST

Public Members:

- R. Andersen, NY
- A. Buie, MD
- C. Cotsoradis, NIST
- G. W. Diggs, VA
- J. Elengo, Consultant
- D. Guensler, CA
- P. Peterson, USDA-GIPSA
- R. Pforr, USDA-GIPSA
- J. Truex, OH
- O. Warnlof, NIST
- K. Yee, NIST

Private Sector Members:

- M. Adams, Fairbanks Scales
- J. Antkowiak, Hottinger Baldwin Msmts.
- J. Elengo, Consultant
- W. Goodpaster, Cardinal/Detecto
- K. Haker, BLH Electronics
- T. Johnson, Sensortronics
- D. Hawkins, Thurman Scale
- D. Krueger, AT&T
- G. Lameris, PMI Food Equipment
- H. Lockery, Lockery Assoc.
- T. Luna, Scales Unlimited, Inc.
- J. MacDonald, Chronos Richardson
- J. Reimer, Weigh-Tronix
- J. Robinson, Assoc. of American Railroads
- T. Stabler, Mettler-Toledo, Inc.
- D. Tonini, Scale Manufacturers Assoc.
- J. Wang, A&D Engineering, Inc.

Measuring Sector

Chair: N. Alston, Daniel Flow Products, Inc.

Technical Advisor:

T. Butcher, NIST

Public Sector Members:

- R. Andersen, NY
- D. Guensler, CA
- J. Jeffries, FL
- S. Malone, NE
- R. Marceau, Canada
- R. Murdock, NC
- O. Warnlof, NIST
- W. West, OH
- J. Williams, NIST
- W. Wotthlie, MD

Private Sector Members:

- F. M. Belue, Belue Associates
- R. Fonger, Bennett Pump
- M. Hankel, Liquid Controls
- F. Holland, Schlumberger Technologies
- R. Huff, Universal Epsco
- D. Joines, Dresser Wayne
- G. Johnson, Gilbarco
- M. Keilty, Micro Motion, Inc.
- D. Krueger, NCR Corp.
- S. Retrum, Shell Oil Co./API
- T. Scott, Brooks Instrument Co.
- J. Skuce, Smith Meter, Inc.
- D. Smith, William M. Wilson's Sons
- R. Traettino, Liquid Controls
- R. Tucker, Tokheim Corp.

Automatic Weighing Systems Working Group

Chair: D. Johannes, CA

Technical Advisor:

C. Cotsoradis, NIST

NCWM Organization Chart

<p>Belt Conveyor Scales Sector</p> <p>Chair: N. Johnson, Merrick Corp.</p> <p>Technical Advisor: C. Cotsoradis, NIST</p> <p>Public Members:</p> <ul style="list-style-type: none"> C. Bertrand, Canada A. Buie, MD T. Butcher, NIST R. Miller, CO L. Turberville, AL O. Warnlof, NIST <p>Private Sector Members:</p> <ul style="list-style-type: none"> W. Brasher, Southern Co. Services G. Burger, Consultant M. Casanova, Ramsey Technology P. Chase, Envirotech D. Cockrell, Consultant R. Dietrich, Kaskaskia Valley Scale R. DeSollar, Central IL Pub. Service S. Hawkins, ABC Scale T. Johnson, Sensorstronics K. Knapp, Milltronics F. Joe Loyd, CSX Transportation J. MacFarlane, CST Auto Weigh J. Oliver, Virginia Power N. Ortyl, III, Dresser Industries R. Penner, Riede Systems J. Robinson, Assoc. of American Railroads P. Sanford, Thayer Scale D. Tonini, Scale Manufacturers Assoc. 	<p>Grain Moisture Meter Sector and Near Infrared Protein Analyzer Sector</p> <p>Chair: L. Hill, Univ. of Illinois</p> <p>Technical Advisor: J. Barber, J.B. Associates</p> <p>Public Members:</p> <ul style="list-style-type: none"> Canadian Grain Commission R. Burns, AR T. Butcher, NIST D. Funk, USDA-FGIS D. Onwiler, NE R. Pierce, USDA-GIPSA D. Lee-London, NIST J. Rothleder, CA C. Tew, NC R. Wittenberger, MO R. Woithlie, MD <p>Private Sector Members:</p> <ul style="list-style-type: none"> J. Bair, Millers Nat'l Federation J. W. Barber, Dickey-John A. Butler, Perten Instruments M. Emori, Kett Electric Laboratory* C. Hurburgh, Jr., IA State Univ. D. Kaminsky, Trebor J. McClenethan, Growmark, Inc. M. Hall, Sartorius Instruments T. O'Connor, Nat'l Grain & Feed Assoc. A. Pflug, CSC Scientific* T. Runyon, Seedboro Equipment F. Seeber, Shore Sales Co., Grain Elevator & Processors Soc. C. Watson, Stein Labs, Perstorp Analytical, Foss Foods
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*(Grain Moisture Meter Sector only)

President's Address to the 80th Annual Meeting Of the National Conference on Weights and Measures

Presented by Raymond G. Kammer, Deputy Director of NIST

Introduction

I am pleased to be here today. In fact, the way things have been going in the Congress lately, I am extremely pleased to be here at all. For instance, one bill introduced in Congress would eliminate NIST except for the Office of Weights and Measures, which would be moved to the National Science Foundation. When Gil Ugiansky heard that, he called me and said if I would agree to talk at this meeting, he would hold a job for me in his office. So here I am.

You may have heard a lot of rumors about the future of the Department of Commerce, NIST, and OWM. If so, you are probably wondering what is really happening and how your Conference might be affected by any potential changes. I will review for you the current status of proposals under consideration by the Congress; however, please understand that what I tell you could change at any time.

Status of Proposals Affecting NIST in Congress

Bills have been introduced in both houses of the Congress to dismantle the Department of Commerce: Chrysler Bill in the House (HR 1756); and Abraham Bill in the Senate (S.929). They are very similar. According to these bills, the Director of NIST, the "Weights and Measures Functions," and the Quality Program would be transferred to the National Science Foundation. The remaining functions and the NIST property and facilities would be sold to private entity to perform NIST functions. Hearings on both bills are ongoing. These efforts are unlikely to become law in the current form but likely will pass the House.

On the authorization and appropriations side, the House Science Committee proposes to preserve the Scientific and Technical Research Services (STRS) (referred to in House documents as "the NIST Core") and Construction of Research Facilities, CRF, in FY 1996 at approximately FY 1995 levels. This translates to \$263M for laboratories, and \$60M for construction. But they provide no authorizations for the Manufacturing Extension Partnerships (MEP) and the Advanced Technology Program (ATP). The House Appropriations Committee has allocated \$81.1M for MEP, \$263M for the laboratories, and no funding for ATP. The Senate Commerce Committee is working on an authorization bill for NIST for FYs 96, 97, and 98. (On August 10, the Senate Committee on Commerce, Science and Transportation approved the FY 1996 NIST authorization. The marks are \$263M for STRS, \$427M for Industrial Technology Services, ITS, which includes funds for a new program, the Experimental Program to Stimulate Competitive Technology, EPSCOT, and \$60M for CRF for a total of \$750M. No appropriations are authorized for ATP grants awarded after 10/1/95.) The full Senate vote on this will not occur until after the Labor Day.

While these bills are progressing through different committees in the two houses, the President has threatened to veto any bill sent to him that does not contain funding for ATP. The President's support appears to be very strong for technology and infrastructure-related programs like the ATP. There are major differences between the President's budget proposal and congressional bills. If these differences are not resolved, we may see problems in the fall. You may have noted in the media many disturbing predictions about the potential for a congressional "train wreck" later in the fall which may lead to a temporary shutdown of government. We are keeping a close watch on these developments.

NIST Support of the NCWM

Based on the information now, I'm guessing that there will be no reduction in the level of support that NIST now gives to the National Conference on Weights and Measures. We will continue to provide administrative support to the NCWM, issue its publications, operate the National Type Evaluation Program, maintain programs with Canada, and carry on other programs for the Conference. In addition, we will continue to provide training programs, such as the recent very successful course on NIST Handbook 133 procedures for checking the net contents of packaged goods in which 20 State instructors were trained and they in turn will train over 700 field staff by the first of the year. Our support for State metrology programs will also continue. In fact, we will be able to offer training in a new, state-of-the-art metrology laboratory at NIST. I hope that you will visit the laboratory the next time you are in the Gaithersburg area -- it is a very impressive facility.

President's Address

Because of the uncertainty of the future, however, OWM and this Conference should consider ways to conserve resources, if necessary. I know that Gil Ugiansky and his staff will be working to develop a plan to reorganize OWM so that it is more efficient and more responsive to your needs. They also will be evaluating their work load and assigning priorities to the many projects assigned to them. I am sure they will be looking to you for help in selecting the tasks that are most important to the membership of this organization.

We are very pleased with the work that Gil has done since he came to OWM at the beginning of April. We have received many favorable comments about him from a number of individuals in the States and in industry. Consequently, we have appointed Gil Chief of the Office of Weights and Measures. I know that he is looking forward to working with you to continue the important work of this Conference. I hope you will give him your full support.

NCWM Partnerships with Industry/Government

I understand that this week you will be voting on proposals to appoint industry representatives to some of your standing committees. It has always been a great strength of this organization that all interested parties have a voice in its deliberations. The NCWM is widely recognized as a model of cooperation between government and industry. When the U.S. Environmental Protection Agency designed its new National Environmental Laboratory Accreditation Conference, it used the NCWM's structure and procedures as a guide. Also, in a recent report on Standards, Conformity Assessment, and Trade, the National Research Council recommended that NIST develop a 10-year strategic plan to eliminate duplication in State and local criteria for accrediting testing laboratories and product certifiers. They went on to say that the National Conference on Weights and Measures should be the model for the plan. This type of recognition is well deserved and you should be proud of it.

The diversity of interests represented at this meeting is impressive. There are, of course, government officials from State, local, Federal, and foreign governments. In addition, there are manufacturers of weighing and measuring devices, users of this equipment, packagers, manufacturers of all types of products, major retailers, representatives of major technical and trade associations, and consumer representatives.

The Conference is working with many of these different interests to accomplish mutual objectives. An excellent example is the development of a 5-year Cooperative Research and Development Agreement to improve grain moisture measurements that is the result of a partnership between the U.S. Department of Agriculture Grain Inspection Packers and Stockyards Administration, the grain industry, and NIST on behalf of the NCWM. Other examples include support received from industry and from Lou Straub and the State of Maryland for NCWM's training class on NIST Handbook 133 and cooperation between the Food and Drug Administration and NCWM to establish national standards for checking net contents of packaged goods.

Another outstanding example is the cooperation between NCWM, the Food Marketing Institute, the National Retail Federation, and other trade associations to develop the Examination Procedure for Price Verification that you will be considering for adoption this week.

The willingness of these various interests to work with you attests to the recognition of the NCWM reputation for fairness and that it has been successful in maintaining "a level playing field" that is essential to commerce. I commend your efforts and I encourage you to continue and expand your partnerships with others.

Chairman's Address to the 80th Annual Meeting 1995

**Presented by James C. Truex, Acting Chief
Ohio Division of Weights & Measures**

Honored guests, fellow members, welcome to the 80th Annual National Conference on Weights and Measures (NCWM).

I am pleased that Ray Kammer, NCWM President Prabhakar's Deputy Director at the National Institute of Standards and Technology (NIST) is here with us today. Mr. Kammer has been very supportive of the NCWM for many years with Dr. Ambler, Dr. Lyons, and now Dr. Prabhakar at the helm of NIST. I want to publicly thank you on behalf of the Conference for your support and assistance over the years. You should also know that Dr. Peter Heydemann and David Edgerly have played an active role in the Conference in the last couple of years. They too have been very supportive for the NCWM and have put some money with their words. Dr. Heydemann has increased the number of NIST/Office of Weights and Measures (OWM) support staff. He has also told us that money will be made available for other NCWM needs, a national communications system and a national training academy, to name two. As you know, weights and measures is one of the core NIST programs that affects every U.S. citizen, every single day. Ray, I hope you, Peter, David, and others at NIST will continue to play an active role in the Conference. I assure you that NIST has the support of the NCWM.

Isn't Maine a beautiful State? I am impressed by the very warm welcome extended to us. We appreciate the assistance provided by Clayton Davis, Stan Millay and their staff in preparation for and during this meeting. On behalf of the Conference, thanks to all of you.

Being Chairman of the NCWM is a 3-year appointment nowadays. You spend the first 2 years traveling around the country making presentations, answering numerous phone calls, giving advice and getting a lot of advice. I can assure you that not all of that advice was requested or wanted. I have to admit that all of this was a little overwhelming at times for this country boy from rural Ohio. And now, for the third year, I get to be Chairman of the Board of Governors. On one hand, it has been exciting, fulfilling, rewarding, a true learning experience that I'm sure will make me better at my job in years to come and for that I am truly greatful to the Conference. On the other hand, thank God you only get to do it once.

The road to the 80th NCWM was not always straight. It had some turns and surprise "s" curves. Many of the curves resulted because of changes at NIST. I remember my first meeting with Peter Heydemann. I was attending a working group meeting in the Gaithersburg area when the Conference was informed that NIST/OWM was being reassigned to Technology Services and Dr. Peter Heydemann was the Director of that section. Allan Nelson, then NCWM Chairman, called and asked if I would take the time to visit Peter and inform him of our needs while I was in the area and I agreed. A meeting time was arranged. I was greeted at the door by Peter who promptly handed me a business card, which read, "Dr. Peter L. M. Heydemann, AHSM, Director of Technology Services." He wasted no time in informing me that "AHSM" was an acronym for Attila the Hun school of management, and the look on his face told me that he meant every word. That attitude scared us a little, but the questions he asked that day were very appropriate from a manager's perspective. Still we knew that we had to find a way of proving the Conference to Peter. Tom Geiler, then Chairman of the NCWM, decided it was best to take Peter to the grass roots of weights and measures - to a State office and laboratories. California was selected and we spent a week with Peter. He was shown anything he wanted to see and we answered any question he asked. Our relationship with Peter has been excellent ever since. In addition, not long after the Conference last July, we learned that Henry Oppermann was moving on to new adventures south of the border. Then, early in 1995, we were informed that Carroll Brickenkamp was transferring into another area at NIST. I do not think there is a NCWM member that would have thought, a year ago today, that we would be holding this 80th Annual Meeting without Henry and Carroll. These two people were as dedicated to weights and measures as anyone could be over the last twenty years. They both worked tireless, long hours on behalf of the conference. I know I speak for the entire NCWM when I publicly wish them our best in their new endeavors.

So, we have witnessed some transitions the last couple of years. It was amazing to me that the Conference did not lose a heartbeat during the transitions. There was no stagnant period. That says a lot for the strength of the NCWM and the abilities of the Conference members. The Conference is a strong organization with many strong leaders representing both the public sector and private sector. We can be proud to be a part of this organization.

Chairman's Address

The theme of the NCWM in this 80th year, "Quality Partnerships and Programs through Education," is appropriate because of the challenges facing us this year and every year. The Conference has proven to be a perfect forum for the discussion and resolution of diverse issues. Many of us have stated that the NCWM is a model that could be copied by other groups to improve their effectiveness. Nonetheless, what the Conference decides this week loses some effectiveness if we don't go home, implement the actions, and take the results of this Conference to every state, county, and city weights and measures jurisdiction in this country. We must continue to improve our communications and education processes.

There are several current Conference activities I would like to mention at this time. U.S./Canada mutual recognition of type evaluations is expanding into other weighing devices and liquid measuring devices. This agreement between two countries' weights and measures leaders is truly a success story. I am very proud to have played a small part in this project. We have succeeded in reducing a trade barrier for our industries. Another example of what the Conference can help achieve when we buckle up and get down to business. I also tip my hat to the Canada representatives for their professional work on this project.

NIST has officially recognized NTEP as the issuing authority for International Organization of Legal Metrology (OIML) R76 (non-automatic weighing instruments) and R60 (load cell) certificates. NTEP is nearing the issuance of our first U.S./OIML Certificate. Equipment has been purchased. Initial training of NTEP technicians has been conducted. If David Smith was correct when he labeled NTEP our crowning accomplishment, then this project will add another jewel to our crown.

A Program Evaluation Work Group was established after the Annual Meeting last year in San Diego. Some very knowledgeable and influential NCWM members have agreed to work on this project which is being guided by Darrell Guensler, their chairman. Recent NCWM chairmen have acknowledged our responsibility to successfully guide our programs into the 21st century, and to guide us in our reactions to challenges such as budget cutting, program downsizing and privatization. The Program Evaluation Work Group has a very exciting agenda that touches on all these issues. A national communications system, the ability to assess program benefits and costs, and ideas to optimize and assess program efficiency and effectiveness, and program accreditation are all issues being discussed by the Work Group. No weights and measures jurisdiction should find it necessary to stand alone. With the help of the Work Group, the NCWM and a core group of members should be able to respond at the drop of a hat to jurisdictions in need. This project may prove to be one of the most important and influential ever undertaken by the Conference.

The NCWM Executive Committee has begun working on a strategic plan. Peter Heydemann and David Edgerly have both told the Executive Committee that the Conference needed a long range plan. Major projects needed to be identified and priorities needed to be set for appropriate NIST funding to be budgeted. NIST felt strong enough about this that David Edgerly provided the strategic planning session facilitator. Many of the same issues being discussed by the Program Evaluation Work Group, i.e., alternatives for the delivery of weights and measures services, a national training academy, weights and measures accreditation, and a national weights and measures information system, also were listed by the Executive Committee as goals or objectives. That alone should tell us we're headed in the right direction. The process has been started but there is still a lot of work to be done. I have asked Tom Geiler and David Smith to take the plan initially developed, to be bold, aggressive, wide-eyed dreamers and carry it to the outer limits. They have already taken it a step further and I know they will do a tremendous job. I won't go into any more detail on this subject for fear of stealing some of Charlie Gardner's thunder. My message to you is that some of the proposed actions that are likely to surface again as a result of the strategic plan, e.g., program accreditation, strategic device testing vs. 100% device testing, increased OIML participation, and updating Handbook 44 every 3 or 4 years, may not be popular. However, we need to put these proposed actions on the floor of the Conference for open discussion. We have to look at all sides of the issues. We need to work smarter. We need to build quality into our weights and measures programs and our U.S. weights and measures system. I urge you to listen, discuss, understand, and think before you judge.

There are many people I need to thank. First is my staff in Ohio. I have turned many of the daily operations over to my staff at home. They have performed so well that I'm not sure I feel needed anymore. I owe them much gratitude. Without their efforts and support I would not be here today.

I have a high regard and appreciation for the NIST/OWM staff. I have had to call on each and every one of them at some time in need of assistance. I thank all of you for your help and support.

Gil Ugiansky walked on to the Conference path in the middle of one of those "s" curves. Gil had the title of Acting Chief of OWM and Acting Executive Secretary. I have the title of Acting Chief in Ohio. There are many that believe we fit our "acting" titles literally Gil, and that we are just doing the best we can to "act" our way through things. At least that was my perception but now you are permanent and I'm outgoing - doesn't do much for my ego. Gil and I have helped guide each other the last few months. I can assure you that Gil jumped right into the issues of concern at OWM and of the NCWM. I should also report that I am convinced that Gil has the best intentions for OWM and the NCWM in mind. Thank you Gil for your dedication, patience, and guidance over the past months and congratulations on your appointment as Chief of OWM.

Thanks to the standing committees; Executive, Specifications and Tolerances, Laws and Regulations, and Education for your dedication and many hours of work. A personal word of appreciation to the officers, other committee members, task force and work group members, and other members of the NCWM who have done so much for the Conference and to help me.

Special thanks to Tom Geiler. Tom must be given the credit for preparing me for my year as Chairman. There is no question in my mind that Tom is totally dedicated to the NCWM and I don't think he himself would admit to, or can see, all the good he did for the Conference, the direction he provided in critical times, and how much he taught me.

Special thanks to Otto Warnlof and his wife Irene for their support and tutoring. Otto has served this Conference well for many years. I had the pleasure of working with Otto when he was technical advisor to the S&T Committee and he has helped guide me with OIML issues. In fact, as late as last week Otto was critiquing an OIML paper I am scheduled to present in September, for me. Thank you, my friends.

During my term as chairman, I found myself always reacting in a manner which I determined was best for the Conference, even though there were a few times that I did not believe personally that this was the correct action. That is difficult for one to do, difficult to rationalize and even more difficult to explain. I'm confident that your next two chairmen, Charlie Gardner and Barbara Bloch, will react in the same unexplainable manner. I thank all of you for the opportunity to be Chairman of the National Conference on Weights and Measures. Again, I sincerely appreciate all the support that has been given to me. I know that you all will do the same for Charlie Gardner and Barbara Bloch.

HONOR AWARDS

10 Years

William Brasher
Clayton Davis
Cathryn Pittman
Victor Gerber

15 Years

Fred Clem
Richard Davis
Robert Fonger
Charles A. Gardner
Walter Kupper
Joseph Rothleider

20 Years

Darrell Guensler
John J. Robinson
Steven Malone
Allan Nelson
Daryl Tonini

25 Years

Richard Claussen

30 Years

Thomas Stabler

Special Recognition Awards

The work of the members we now honor is not complete until the official closing of the 80th annual meeting on Thursday. However, we would like to recognize them at the general session for their contributions over the past years within their respective committees and for their contributions to the National Conference in general.

Executive Committee

Sidney Colbrook, State of Illinois
J. Alan Rogers, State of Virginia

Laws and Regulations Committee

Sharon Rhoades, State of Arizona

Specifications and Tolerances Committee

Richard Suiter, State of Nebraska

Education, Administration, and Consumer Affairs Committee

Max Gray, State of Florida

Vice-chairmen

Fred Clem, Columbus, Ohio
Dean Ely, State of Pennsylvania

Darrell Guensler, State of California
Danny Willis, State of Kentucky

Sergeants-at-Arms

Harold Prince, State of Maine
Conrad Brown, State of Maine

Associate Membership Committee

William Corey, American Frozen Foods

Annual Committees

Resolutions Committee:

Bruce Martell, State of Vermont
Carol Fulmer, State of South Carolina
William Lagemann, State of Delaware
Richard Philmon, State of Illinois

Budget Review Committee

N. David Smith, State of North Carolina

Credentials Committee

Dean Ely, State of Pennsylvania

Auditing Committee

Herb Eskew, State of Texas

Nominating Committee

Thomas Geiler, Town of Barnstable, Massachusetts
Darrell Guensler, State of California
Steve Malone, State of Nebraska
Allan Nelson, State of Connecticut
Louis Straub, State of Maryland
George Shefscheck, State of Oregon
N. David Smith, State of North Carolina

President's Award

This is the tenth annual presentation of the president's award. This award is given for two levels of achievement.

A banner is presented to those directors representing States that have 100% membership in the National Conference on Weights and Measures for both State and local weights and measures officials. The membership year for this award is July 1, 1994 through June 30, 1995.

Those States that repeat with 100% membership are awarded a streamer for their banner. A streamer is presented for each year the State qualifies.

The second level of the President's Award is a certificate presented to any State in which all of the weights and measures officials from the State office are members of the Conference.

Honor Awards

Awards for First Year Banner

There are no new banners for the 1994-1995 membership year. However, the following States continue to sustain their 100% membership.

Streamer Award for the Second Year

State of Tennessee

Streamer Awards for the Third Year

Territory of the U.S. Virgin Islands

State of Iowa

Streamer Awards for the Fourth Year

Commonwealth of Puerto Rico

State of West Virginia

State of Indiana

State of Colorado

Streamer Awards for the Sixth Year

Six States Qualify for Streamers for the Sixth Year

State of Montana

State of Oregon

State of Utah

State of Vermont

State of Washington

State of Wyoming

Streamer Awards for the Seventh Year

Four States Qualify for Streamers for the Sixth Year

State of Arizona

State of Michigan

State of New Hampshire

State of Virginia

Streamer Awards for the Ninth Year

Six States Qualify for 100% Membership

State of Alaska

State of Delaware

State of Idaho

State of Kansas

State of New Mexico

State of South Dakota

Streamer Awards for the Tenth Year

The following two States have had 100% membership in the National Conference on Weights and Measures for their States since the beginning of the award. These two states continue to participate 100% in the membership program.

State of Arkansas

and

State of Nebraska

President's Certificate Award

Seven States qualify for the President's Certificate, with 100% of their State Office Staff members for the 1994-95 Conference Year

Second Year Award

State of Connecticut
State of Missouri

Third Year Award

State of Massachusetts

Fourth Year Awards

State of Illinois

Sixth Year Awards

State of Maine
State of New York
State of Wisconsin

Thirty States, overall, including the District of Columbia, the Commonwealth of Puerto Rico, and the Territory of the U.S. Virgin Islands, have been awarded banners throughout the years; nine States have certificates, for a total of 39 States and Territories.

Report of the Executive Committee and National Type Evaluation Program Board of Governors

James Truex, Chairman
Acting Chief of Weights and Measures
Ohio Department of Agriculture

Thomas F. Geiler, Chairman of the NTEP Board of Governors
Director of Barnstable Consumer Affairs
Hyannis, Massachusetts

100 Introduction

This is the Report of the Executive Committee and the National Type Evaluation Program (NTEP) Board of Governors for the 80th Annual Meeting of the National Conference on Weights and Measures. The Report is based on the Interim Report offered in NCWM Publication 16, Program and Committee Reports; the Addendum Sheets issued at the Annual Meeting; and actions taken by the membership at the Voting Session of the Annual Meeting.

The Report is divided into two parts: (1) management of the National Conference on Weights and Measures (items in the 101 Series) and (2) management of NTEP (items in the 102 Series), as addressed by the Committee in its role as the NTEP Board of Governors. Table A, which is an index of reference key items included in the report, lists the reference key number, title, and page number for each item. Voting items are indicated with a "V" after the item number. Consent calendar items are marked with a "VC." An "I" denotes issues that are reported for information and items marked with a "W" have been withdrawn by the Committee. Table B lists the Appendices to the report, and Table C provides a summary of the results of the voting on the Committee's items and the report in entirety.

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Voting Results

Reference Key No.	House of State Representatives		House of Delegates		Results
	Yes	No	Yes	No	
Consent Calendar	41	0	54	0	Passed
101-1A (Motion to Hear Amendment)	30	6	33	11	Passed
101-1A (Motion to Amend)	11	29	8	44	Failed
101-1A	33	6	44	12	Passed
101-1B	36	4	46	8	Passed
101-1C (Decided by vote in the House of State Representatives due to tie vote in the House of Delegates)	28	14	29	29	Passed
102-6A	42	0	57	0	Passed
100 (Report in its Entirety)	42	0	46	1	Passed

Detail of Items

Part I - Executive Committee

101-1

Constitution and Bylaws: Add Associate Membership to Standing Committees

This item is carried over from Item 101-3 from the Report of the 79th NCWM, 1994, page 31.

Recommendation: The Executive Committee generally endorses the Associate Membership Committee proposal described in the "Background" section at the end of this item. There is unanimous support by Executive Committee members for adding a nonvoting Committee Associate member to the Executive and Education Committees, and mixed support for adding an Associate member to the Laws and Regulations Committee. Both the Associate Membership and the Executive Committee have reservations to adding an Associate member to the Specifications and Tolerances Committee at this time.

Because there seems to be general endorsement for putting nonvoting Associate members on some, but not all, of the Standing Committees, the Executive Committee is dividing this item into four parts, putting the question of membership on each of three Standing Committees to a separate vote, while postponing action on the S&T Committee at this time.

The Executive Committee is not recommending a change to the Constitution and Bylaws this year. Instead, the Committee recommends a vote on placing Associate members as nonvoting members on three standing committees on a trial basis, to try out the process before changing the Constitution and Bylaws. Some members of the Executive Committee were under the impression that the Bylaws already permitted appointment of Associate members to the standing committees. Article V, Section 2, of the Bylaws provides: "At his or her option, the Chairman designates one or more advisory or associate members as consultants to a standing committee." However, without arguing whether or not this section already permits the Chairman to act, in view of the importance of these recommendations, the Executive Committee recommends a trial period during which the Conference can assess the efficacy of the change to Conference operations. This recommendation is not unprecedented. When the Conference adopted new voting procedures, they were tried out before the vote to formally adopt the procedures.

No term was set for the trial period; however, it was scheduled to begin at the NCWM's 1995 Annual Meeting, subject to the adoption of items 101-1A through 101-1C. The Associate Membership Committee was asked to nominate an Associate Member Representative for each committee. (For more information, see the Background discussion that follows the item 101-1D recommendation.) The separate voting items were as follows.

101-1A V Constitution and Bylaws: Add Associate Membership to Executive Committee

(This item was adopted.)

Recommendation: Add a NONVOTING Associate member to the Executive Committee on a trial basis. The member will be called an "Associate Member Representative" (AMR). The Associate member will sit as a member of the Executive Committee ONLY and will not sit as a member of the NTEP Board of Governors, nor will the Associate member be privy to NTEP Board of Governors executive sessions. In order to signify this, the Associate member will sit with the Executive Committee at the head table during discussion and decisions on items in the 101 series, but will join the audience, if the meeting is open, during discussion of all items in the 102 series.

101-1B V Constitution and Bylaws: Add Associate Membership to Education, Administration, and Consumer Affairs Committee

(This item was adopted.)

Recommendation: Add a NONVOTING Associate member, to be called an "Associate Member Representative" to the Education, Administration, and Consumer Affairs Committee on a trial basis.

101-1C V Constitution and Bylaws: Add Associate Membership to Laws and Regulations (L&R) Committee

(This item was adopted.)

Recommendation: Add a NONVOTING Associate member, to be called an "Associate Member Representative," to the Laws and Regulations Committee on a trial basis.

There was strong support for an AMR for the L&R Committee among the industry representatives present at the Interim Meeting.

101-1D I Constitution and Bylaws: Add Associate Membership to Specifications and Tolerances (S&T) Committee

Recommendation: An Associate Member Representative (AMR) to the Specifications and Tolerances Committee is not currently recommended by either the Associate membership or the Executive Committee. There is still disagreement among the Associate members with respect to this part of the Committee's proposal. The Scale Manufacturers Association (SMA), the Gas Pump Manufacturers Association (GPMA), the AMC, and other interested participants will continue to evaluate and develop this proposal.

101-1 Background: In the past, the Associate Membership Committee (AMC) has been primarily responsible for hosting social events. While there is a place for this activity, the scope of industry involvement has broadened over the past several years for the betterment of the NCWM. The new NCWM dues structure allows the AMC and the NCWM to jointly sponsor events and allocate excess monies to worthwhile mutual projects, such as the completion of the consumer pamphlet published by the Liaison Committee, in an attempt to increase Weights and Measures visibility and awareness. The regional Associate Membership Committees have allocated part of their funds for purchasing video equipment for Weights and Measures training. This is a model for how the two sectors can and should continue to work together, but additional representation and participation by Associate members has been proposed by the AMC. AMC Chairman Bill Corey, American Frozen Foods, Inc., appointed past AMC chair Chris Guay, Procter and Gamble, to continue to head the AMC task force. Members of this task force are Bill Braun (WHB Resources), Bill Corey (American Frozen Foods), Richard Davis (James River), Chip Kloos (Hunt-Wesson), and David Quinn (Fairbanks Scales). They have worked with the standing committee members and the remaining AMC members to prepare a plan having broad-based industry input and agreement. A first draft proposal was provided by the AMC task force to the Executive Committee in January 1994. A draft was printed as part of the 79th Annual Meeting final report to allow the Conference to vote on changes to the Constitution and Bylaws at the 1995 Annual Meeting.

The AMC proposed that nonvoting "Associate Member Representatives" (AMR) be created for the Executive; Laws and Regulations; Specifications and Tolerances; and Education, Administration, and Consumer Affairs Committees. Each AMR would have a term of 3 years. Candidates would be identified for the Conference by the Associate membership and each candidate would either be appointed by the Chairman or nominated by the Nominating Committee, depending upon the Committee for which the candidate is recommended, consistent with the NCWM Bylaws.

There was not unanimity within the Executive Committee or the standing committees concerning placing an Associate member on the L&R Committee. There was some concern that the presence of an Associate member at the head table with the active members of the Committee at any time during their deliberations, whether or not the Associate member excused himself/herself from any discussions about items concerning his/her own industry, would send a negative message to any competitor of that Associate member who had to defend his/her position before the Committee.

The 1993/94 AMC Chairman, Chris Guay, discussed the concept of this proposal at the Western (Reno, NV) and Southern (Charleston, SC) Weights and Measures Associations Annual Meetings. In October 1993, the AMC formally proposed the concept of AMRs and discussed the proposal with the Executive Committee at the 1994 Interim Meeting. The proposal was modified and discussed at the Central (Des Moines, IA) and Northeastern (Portland, ME) Weights and Measures Associations Annual Meetings and was presented at the Annual Meeting of the NCWM in July 1994. It was

Executive Committee

also discussed at the Western (Anchorage, AK) and Southern (Atlanta, GA) Weights and Measures Associations meetings as well as the 1994 Central and Northeastern Interim Meetings.

Both private and public sector members of the NCWM strive for equity, fair value, and a level "playing field" in the marketplace. Over the past 10 years, Associate members have become key members and have chaired the National Type Evaluation Technical Committee and its sectors. Associate members provide important technical membership on many NCWM task forces and other work groups, including the Petroleum Subcommittee. With funding becoming harder to get and staffing being reduced in industry and government programs, mutually shared goals and objectives must be better coordinated. Industry members must justify attending Conference meetings when there are no "burning issues" for their individual companies. Increased integration of public and private sector's abilities, knowledge, and experience will provide the NCWM with the talent and resources to prosper in a complex marketplace environment.

The Executive Committee viewed the creation of the AMC as a positive step in the evolution of the NCWM and believes that the AMC should continue to pursue its charter. Several concerns were discussed at the Interim Meeting:

1. If the AMRs were required to be members of the AMC, or if the AMC nominated the AMR candidates, the Constitution and Bylaws of the AMC should ensure balanced representation by all segments of industry, probably by incorporation or reference in the NCWM Constitution and Bylaws. The Executive Committee recommended that the AMC review and revise its charter with this issue in mind and forward its recommended revisions to the Executive Committee for action. The Executive Committee continues to recommend incorporation of the Associate Membership Charter into the NCWM Constitution and Bylaws.
2. Even if the AMR were to excuse himself/herself on issues of a competitive nature, there is concern that the NCWM might be subject to legal challenge from industries that did not achieve their objectives at the NCWM if a competitor were on the committee. For example, how could a petroleum or alcohol industry representative be a member of the L&R Committee (even if excusing himself/herself when the issues were discussed) when issues of the Petroleum Subcommittee came before it? The Associate Membership Committee explored this issue by seeking outside legal opinion. Legal advice was that there were no impediments to Associate membership on the standing committees. A trial period will permit the Conference to determine whether specific protections would have to be incorporated in procedure, due process, and even presence at the Committee table during specific issues. After the NCWM Liaison Committee was disbanded in 1992, an AMR from that Committee completed his term by serving on the L&R Committee as a nonvoting liaison representative for a year.
3. The Associate Membership Committee states that it will elect AMRs at an open AMC meeting. Representative balance between device and packaging industries, as well as type of device manufacturers and service agencies, would seem to be very important at this meeting. A number of issues still need to be resolved. For example, what mix of representation of members would constitute a quorum at the AMC meeting? Could a slate of candidates be sent to all Associate members prior to the voting session? Could the Associate membership have the opportunity to vote at the Annual Meeting or Interim Meeting from a slate of alternatives? What would the roles of the AMC and the Associate membership be in the nomination and selection process? For example, the AMC has no membership from the liquid-measuring industry. How can this be addressed? The AMC will revise and update its bylaws and operating procedures prior to the 1995 Annual Meeting.

The Associate Membership Committee proposal made at the 1995 Interim Meeting appears as Appendix A.

101-2 VC Constitution and Bylaws: Change Title and Add Mission Statement and Objectives for Education, Administration, and Consumer Affairs Committee

(This item was adopted as part of the consent calendar.)

This is carried over from the Committee's 1994 Report in which it was item 101-5.

Recommendation: Add the following Mission Statement for the Committee to the Bylaws:

To provide leadership to develop and implement uniform, quality weights and measures services in the areas of:

- effective program management,
- education, and
- public relations.

Proposed revision of Committee Scope for the NCWM Bylaws:

The Committee on Administration and Public Affairs annually presents a report for Conference Action. Its scope embraces all matters dealing with:

1. development and recommendation of administrative procedures;
2. education and training of weights and measures officials;
3. promotion of weights and measures principles and techniques among users of weights and measures devices and the general public; and
4. liaison with Federal agencies, State agencies, and other groups and organizations on issues within the purview of the committee. This entails explaining, advocating, and coordinating Conference positions, recommendations, and needs before Federal Government agencies, consumer groups, the Associate NCWM membership, domestic and international standards organizations, industry, trade associations, and others. The goals are to provide and solicit information, develop a spirit of cooperation, and promote uniformity with the activities and standards of the NCWM.

Background: In April 1994, the Education, Administration, and Consumer Affairs Committee met with Associate members and with members of the Executive Committee to set new goals and objectives and to prioritize its work. The Education, Administration, and Consumer Affairs Committee decided that the NCWM should change the name of the Committee to Administration and Public Affairs in order to indicate the importance of quality management of weights and measures programs in the Conference. Education will remain a primary objective of this Committee, but the objective of all administrators should be education for themselves and their staffs.

The Executive Committee commends the Education, Administration, and Consumer Affairs Committee for its work and recommends its proposed goals and objectives for adoption by the Conference. The proposal was printed in the 1994 final report in anticipation of its adoption into the NCWM Constitution and Bylaws in 1995.

The Education, Administration, and Consumer Affairs Committee met at the 1994 Annual Meeting and again on November 4 and 5, 1994, to finalize its recommendations to the Executive Committee and the Conference with respect to its management plan and the subgroups that would be recommended for establishment to carry out the work of the Committee.

Chairman Jim Truex has established a Program Evaluation Work Group under this Committee. The Program Evaluation Work Group held its inaugural meeting December 12-13, 1994. See the Education, Administration, and Consumer Affairs Committee report for a status report on the work group.

101-3 VC Constitution and Bylaws: Extend Tenure and Specify Membership of Budget Review Committee

(This item was adopted as part of the consent calendar.)

This is carried over from the Committee's 1994 Report in which it was Item 101-2.

Recommendation: Revise NCWM Bylaws:

The Finance Committee, which shall also serve as the Budget Review Committee, shall be appointed by the Conference Chairman. It shall consist of him/her the NCWM Chairman as Chairman of the Committee, two weights and measures officials as voting members (each with a two year term), and the Treasurer and Executive Secretary as ex-officio voting members. One associate member shall serve in an advisory capacity, without vote. In addition, the Chairman shall appoint two Active and two Associate members to serve on a rotating basis for 4-year terms.

Background: It was decided to expand the membership of the Budget Review Committee beyond the Active members, and to add Associate members as voting members. It was therefore decided that: (1) the Chairman, Treasurer, and Executive Secretary would continue to be members on the Budget Review Committee and that these members would represent the Executive Committee; (2) the tenure of the Budget Review Committee would be increased from 2 to 4 years; (3) two Active and two Associate members would be named to the committee, with the first appointments made for staggered terms. Since the recommendation involves a change in the Bylaws, the recommendation was published in the Interim Report and Final Report of 1994 in preparation for a vote in July 1995. The changes proposed are intended to add to the experience and knowledge of the Budget Review Committee and will not incur additional expenses on the part of the Conference. Both Associate members would have their expenses reimbursed by their companies. Since there were no objections from the floor, the incoming Chairman in July 1994 appointed two Associate members rather than just one member to the Budget Review Committee as if the change to the Bylaws had been adopted by the Conference.

101-4 I Constitution and Bylaws: Addition of Mission Statement and Need for Long Range Planning Group as a Permanent Part of the NCWM Organization

The Executive Committee endorses the need for a permanent long-range planning group. The initial step in the process was to conduct a "strategic planning session" attended by the Executive Committee. Individuals selected for composing the long range planning document were: Tom Geiler, Barnstable, MA, and N. David Smith, NC. NIST Technology Services Deputy Director David Edgerly provided a planning facilitator, Mr. Richard Lefante, The Lefante Group, for the first session. This meeting was held in Alexandria, VA, on March 23 and 24, 1995. At the meeting, the Executive Committee began development of a long-range plan that includes a new mission statement. The long-range plan will be put out for comment when completed. See also priorities discussed with NIST Technology Services management in Item 101-15, as well as the work reported by the Task Force on Planning for the 21st Century (Report of the 77th NCWM 1992) and by the Privatization Work Group (Report of the 79th NCWM 1994).

101-5 I Constitution and Bylaws: Duties of Officers

Source: NCWM Past-Chairman and Chairman of the NTEP Board of Governors, Thomas Geiler.

Background: The NCWM has grown substantially in recent years, both in membership and scope of services. Committee structure has changed to meet the needs of the membership and to provide a better level of service to members. The Executive Committee is planning to review the duties of officers to determine whether they are as clearly defined as necessary and whether the organization chart reflects the appropriate structure to guide the NCWM in the future. Past-Chairman Geiler reported that he had referred to Article IV of the Bylaws many times to better understand his duties, responsibilities, or authority and had found that the section was not always clear. At the Interim Meeting, the Executive Secretary was asked to gather all policies passed by the Committee for the operation of the NCWM, but not included in the NCWM Constitution and Bylaws, and to provide this information to the Executive Committee by the Annual Meeting. Detailed discussions and decisions regarding the duties of officers will be delayed pending work on a long-range plan for the Conference. NCWM Bylaws will be reviewed with respect to incorporating appropriate policy and process already adopted and appearing in other NCWM meeting reports. An additional issue that will be addressed is the need to provide for due process when the voting membership of the NCWM decides to incorporate changes into Handbook 44, for example, and it is subsequently determined that modification is required prior to the next procedural cycle of NCWM action. For example, if the NCWM votes on changes to NIST Handbook 44 in July, those changes become effective January 1 of the following year. Changes may be needed following the NCWM decision in July, but the NCWM does not vote again until the following July. The question to be addressed is how the NCWM should formally handle such rare, but not impossible, emergencies.

At the Annual Meeting, the Executive Committee reinforced the need to update the Constitution and Bylaws and thanked Joan Koenig for her work in starting this process.

101-6 VC Constitution and Bylaws: Liaison with Retirees

(This item was adopted as part of the consent calendar.)

Source: Executive Committee Member Barbara Bloch, CA

Recommendation: Add the Retiree Organization to the list of organizations that fall within the liaison responsibilities of the Executive Committee in the NCWM Bylaws, Article V. Committees, Section 5. Duties and Fields of Operation of Committees, A. Executive Committee:

The Committee serves as a policy and coordinating body in matters of national and international significance which may include such areas as metrication, International Organization of Legal Metrology (OIML), American National Standards Institute (ANSI), International Organization for Standardization (ISO), American Society for Testing and Materials (ASTM), National Conference of Standards Laboratories (NCSL), and such internal matters as may be required, including, for example, the Retiree Organization.

Background: The former Liaison Committee listed collaboration with other organizations, specifically mentioning the retiree membership. When the Conference in July 1994 allocated liaison responsibilities to the other standing committees, the retirees were not specifically mentioned; hence, there is no specific reporting relationship or organizational focus for them. The Executive Committee proposes that the retirees report their activities to the Executive Committee. The retirees will be invited to make such a report at the 80th Annual Meeting.

101-7 I Finances, Treasurer's Report

Charles Gardner, Chairman-Elect, presented his final report as NCWM Treasurer and prepared to pass the NCWM books at the end of the Interim Meeting to J. Alan Rogers, who will act as Treasurer until a new Treasurer is elected in July. Transfer of bank accounts and accounting will begin as soon as Interim Meeting bills are paid.

The 1995 Calendar Year Budget for the NCWM was modified to indicate:

1. a small increase in membership and registration fees expected for 1995;
2. \$15,000 added to account 513 for the Executive Committee to meet in Washington in March for Long-Range Planning and a visit to Capitol Hill;
3. \$6,000 added to account 514 for a second meeting for the Program Evaluation Work Group.

The NTEP 1995 Calendar Year Budget was also modified to indicate:

1. \$12,500 added to account 583.6 to increase NCWM participation in OIML standards participation (costs jointly shared with NIST).

Invoicing for the NTEP maintenance fee has continued to result in approximately 20 percent late payments (after January 1) for the second year in a row. The invoice letter will be reworded to explain the absolute necessity to pay by December 1. If payments are late next year (end of the calendar year 1995), a late fee (perhaps 10 percent) may be considered by the Board of Governors in 1996 for any payment received after December 1, 1995.

See the 1995 NCWM Budget in Appendix B.

At the Annual Meeting, the proposal of the Budget Review Committee for the 1996 Operating Budget was reviewed and accepted by the Executive Committee. (See Appendix B for the 1996 NCWM budget.)

101-8 I Finances, Auditing Committee

Only one member of the Auditing Committee was able to attend the 1995 Interim Meeting. Therefore, Chairman Truex asked members of the Budget Review Committee to assist Monty Hopper in completing a review of the books. N. David Smith (NC), Darrell Guensler (CA), and Harvey Lodge (Cargotec), met with outgoing Treasurer Charles Gardner, incoming Treasurer J. Alan Rogers, and Monty Hopper (Kern County, CA) on January 9 and reported to the Executive Committee on January 10. The financial reports of the Treasurer were found to be in order and correct (see the Auditing Committee report for more information).

The actual income and expenses for 1994 were provided to the Auditing Committee at the Interim Meeting. The Auditing Committee reported to the Executive Committee that the books were in order.

101-9 I Finances, Associate Membership Committee

A status report was provided. The Associate Membership Committee (AMC) provided \$11,000 for 22 \$500 scholarships for training weights and measures officials. The entire Executive Committee publicly thanked the AMC for their contribution to the professional growth of field officials. A report on the status of this project appears in the Education, Administration, and Consumer Affairs Committee Interim Report.

At the Annual Meeting, it was reported that all but two of the States requesting scholarship funds had completed the training for which the funds were requested, and they were scheduled to complete their training sessions by the end of July 1995. (See the Report of the Committee on Education, Administration, and Consumer Affairs for more information.)

101-10 I Organization, Appointments, and Assignments, Status Report

Chairman Truex presented a review of his appointments and provided a status report on the organization of the NCWM and other issues.

Chairman Truex's appointments include:

J. Alan Rogers, VA, Acting Treasurer
Fred P. Clem, Columbus OH, Assistant Treasurer

To the Laws and Regulations Committee:
Karl H. Angell, Jr., WV, 5 years

To the Petroleum Subcommittee (which reports to the Laws and Regulations Committee):
Eric Hamilton, FL, Chairman
Randy Jennings, TN, Technical Advisor

To the NIST Handbook 133 Working Group (which reports to the Laws and Regulations Committee):
Edwin J. Price, TX, representing SWMA

To the Specifications and Tolerances Committee:
Darryl L. Brown, IA, 5 years

To the Education, Administration, and Consumer Affairs Committee:
Richard D. Greek, San Luis Obispo County, CA, 5 years

Chairman Truex appointed a new work group in program evaluation, reporting to the Education, Administration, and Consumer Affairs Committee:

Darrell A. Guensler, CA, Chair
Allan M. Nelson, CT
Steven A. Malone, NE
Ken L. Fraley, OK
Robert G. Williams, TN
Edwin J. Price, TX
Michael F. Belue, Belue Associates
Thomas M. Stabler, Mettler-Toledo, Inc.
Randy St. John, Jr., PA Food Merchants Assn
William J. Corey, Jr., American Frozen Foods
[Dennis Beattie and Gilles Vinet, Legal Metrology Branch, Industry Canada were appointed after the Interim Meeting.]

A report was provided the Executive Committee by Chairman Guensler at the Interim Meeting. The full report is contained in the Education, Administration, and Consumer Affairs Committee interim report. NIST OWM plans to underwrite software development for a standardized national data collection effort. Two pilot studies with different software firms are planned in 1995.

To the Nominating Committee:

Steven A. Malone, NE, 1 year
Louis E. Straub, MD, 1 year
N. David Smith, NC, 1 year
George Shefcheck, OR, 1 year
Darrell Guensler, CA, 1 year
A. Nelson, CT, 1 year

To the Resolutions Committee:

Clayton F. Davis, ME, 3 years
Jerry L. Bane, IA, 3 years
David R. Wallace, CO, 3 years

As Sergeant-at-Arms:

Daniel Newcome, ME
Conrad Brown, ME

To the Auditing Committee:

Monty H. Hopper, Kern County, CA, 3 years

To the Credentials Committee:

Cosmo C. Insalaco, Fresno County, CA, 3 years
Angelique McCoy, Columbus, OH, 3 years

To the Budget Review Committee:

David C. English, Measurement Systems International, 4 years
Harvey M. Lodge, Cargotec, Inc., 2 years
Darrell Guensler, CA, 3 years

To the NTETC Weighing Sector:

Nigel Mills, Hobart, Chairman
John Elengo, Contractor
David Hawkins, Thurman Scale
Andrea Buie, MD
Tom Luna, Scales Unlimited, Inc.

To the NTETC Measuring Sector:

Richard Woithlie, MD
William West, OH
[Robert Traettino, Liquid Controls, was appointed to replace Mel Hankel after the Interim Meeting.]

To the NTETC Belt-Conveyor Scale Sector:

Steve Cook, CA
Larry M. Turberville, AL
Andrea Buie, MD

To the NTETC Weighing Sector, Automatic Weighing Work Group:

Andrea Buie, MD

Between the Interim and the Annual Meetings, Chairman Truex made the following appointments:

To the NTETC Weighing Sector:

William G. GeMeiner, Union Pacific Railroad
Larry Burrow, Sensortronics (replacing Ted Johnson)

To the Petroleum Subcommittee:

Gene Mittermaier, Petroleum Marketers Association of America

101-11 I Publications, Status Report

The status of NIST and NCWM publications was reviewed, including the distribution level, income, and their costs. NIST documents include NIST Handbooks 44, 130, 133, the NCWM Final Reports, and the metrology series of handbooks and publications. NCWM documents include the Interim Agenda, the Interim Reports, Publication 5 (NTEP Certificates and Index), Publication 14 (NTEP Administrative Policy, Test Procedures and Criteria, and Evaluation Checklists), Training Modules, Examination Procedure Outlines, the consumer brochure "Getting What You Pay For," the W&M Today newsletter, and other membership publications.

There was some discussion that NCWM Publication 5 is awkward to use because it is almost the size of several phone books. It was suggested that an electronic version of Publication 5 (for example, a CD ROM version) might be more satisfactory; however, until weights and measures jurisdictions obtain laptop computers with CD ROM drives, such a product could not be widely used in the field.

Plans are underway to provide NIST Handbooks and NCWM publications in electronic forms, for example, on floppy disks or compact discs or through the WAMIS bulletin board. It was decided that only NCWM members will be able to obtain electronic versions of hard-copy publications.

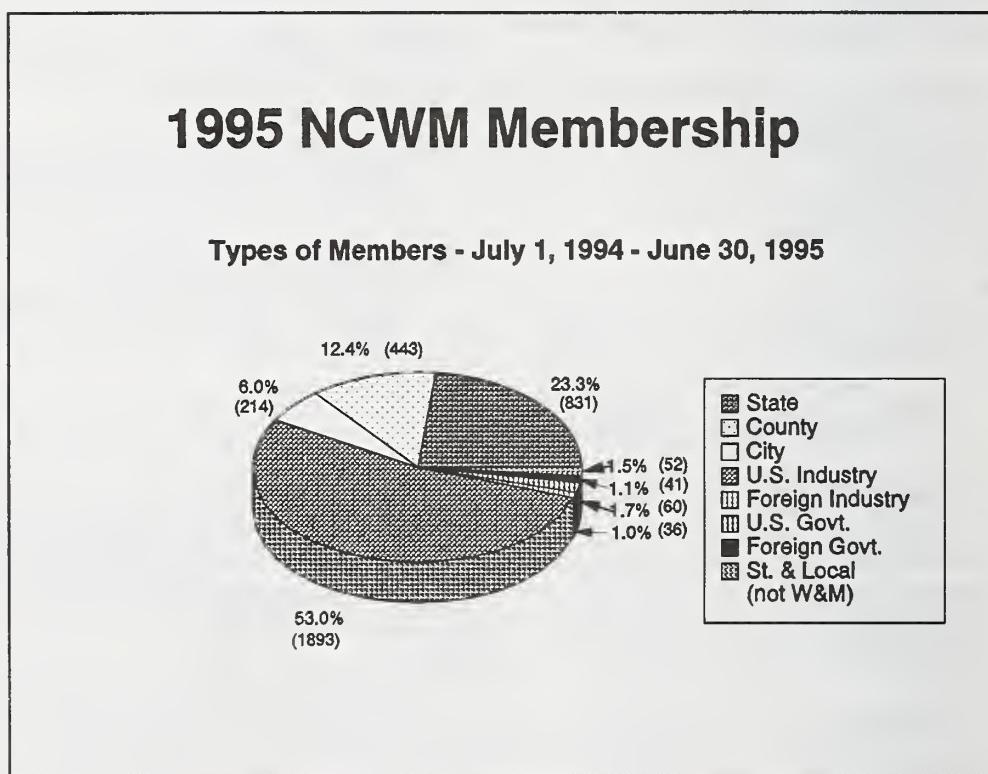
A summary of the estimated and actual costs of publishing NCWM documents and NIST documents issued in support of the NCWM in fiscal year 1995 is given in Appendix G.

At the Annual Meeting, Gil Ugiansky reported that OWM staff had completed the third edition of NCWM Publication 14, "NTEP Administrative Procedures, Technical Policy, Checklists, and Test Procedures." He also announced that a fax-on-demand service has been developed for the NCWM that will permit members 24-hour access to NCWM publications lists, newsletters, NTEP applications, and a variety of other materials by calling an 800 number and using a touch-tone telephone to enter a fax number and document number. Following a test period, the fax-on-demand service will be made available to NCWM members. Future plans are to advertise the fax-on-demand service to other organizations with an interest in weights and measures, thereby promoting the NCWM's objectives.

101-12 I Membership, Status Report

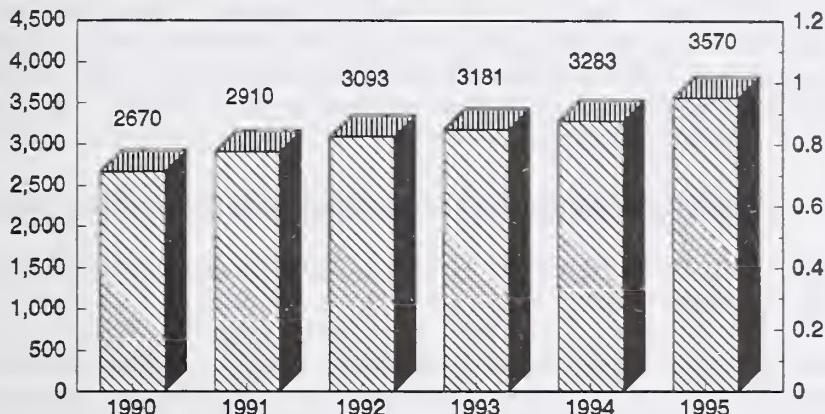
A status report on the continuing effort to increase NCWM membership was discussed. See Appendix C for a numerical summary of the current membership breakdown in the various categories. Ideas for increasing NCWM membership include: (1) investigating the cost of advertising NCWM membership in International Society of Weighing and Measurement (ISWM) publications; (2) contributing articles about the benefits of NCWM membership to regional association newsletters; and (3) setting up a booth on the NCWM at the National Conference on Standards Laboratories (NCSL) and at the Food Marketing Institute (FMI) Government Relations area at their Chicago exposition.

The following charts illustrate the composition of NCWM membership as of June 30, 1995, and NCWM membership growth from 1990 to 1995.



NCWM Membership Growth (Excluding Retirees)

Membership as of June 30 Each Year Shown



101-13 I Meetings, Networking with Other Associations

The Executive Committee has made a commitment to increase its networking with the Congress and other organizations with interests in the area of weights and measures. Since the 1995 Interim Meeting, Executive Committee members, along with NIST officials and NCWM associate members, have visited Capitol Hill three times to talk to key Congressmen and Congressional staff. The Committee feels strongly that this level of outreach should continue in the future, especially because of the current climate in Congress.

During the past year, members of the Executive Committee have participated in a number of association meetings, including those of the Scale Manufacturers Association, the National Industrial Scale Association, the Food Marketing Institute, the International Society of Weighing and Measurement, and all four regional weights and measures associations. Attendance at these meetings has been very beneficial in establishing or strengthening relationships with the concerned groups.

At the Annual Meeting, Alan Rogers presented a draft report to the Executive Committee with recommendations for linking the regional associations with the NCWM. This draft report will be further refined and sent to the regionals for review and comment.

101-14 I Meetings, Annual and Interim, Future

81st Interim and Annual Meetings

The 1996 Interim Meeting will be held January 21 to 25 in Ft. Lauderdale, FL.
The 81st Annual Meeting will be held July 21 to 25, 1996, in New Orleans, LA.

82nd and 83rd Annual Meetings

The 82nd Annual Meeting (1997) is planned for the Chicago, IL, area.
The 83rd Annual Meeting (1998) is planned for the Portland, OR, area.

101-15 I Program, OWM and NIST

Since July 1994, a number of changes have been made to the OWM staff and management. Major changes included Henry Oppermann leaving to take a position as a U.S. representative in Mexico and Carroll Brickenkamp leaving to accept another position in NIST's Technology Services. At the beginning of April 1995, Gilbert M. Ugiansky was named Acting Chief of OWM. In July he was named the Chief of the Office. He has been working with the NIST staff to establish priorities for the more than 60 projects assigned to the Office. NCWM members will be asked to assist OWM in determining what the priorities should be. As part of this effort, OWM identified the completion of NCWM Publication 14, "NTEP Administrative Procedures, Technical Policy, Checklists, and Test Procedures," as a high priority of the Conference. Other OWM work was postponed or reassigned to complete this project. In addition, OWM is in the test phase of a fax-on-demand service that will free staff from spending time responding to routine requests for information and enable them to spend more time on higher priority activities. (See Item 101-11 for more information on Publication 14 and the fax-on-demand service.)

101-16 I Program, International Organization of Legal Metrology

Dr. Sam Chappell, Chief of the NIST Standards Management Program, reported on U.S. participation in OIML standards development activities in legal metrology.

Over the last 3 years, the NCWM has redirected its international standards resources to the U.S./Canada Mutual Recognition of Type Evaluation Program. In the past year, device manufacturers have asked that the National Type Evaluation Program offer OIML Certificates of Conformance as soon as OIML Recommendations are revised to enter the OIML Certificate System. Although U.S. device standards are quite similar to comparable international standards, they are not identical due to significant philosophical differences between OIML standards and U.S. standards. The United States, and NCWM in particular, could play an important role in explaining the more cost effective U.S. approaches to legal metrology administration and regulation in international standards forums but has reduced its participation in OIML meetings in the last year.

David Edgerly, NIST Technology Services Deputy Director, offered to share the costs of sending NCWM representation to as many as five OIML meetings during calendar year 1995 in order to achieve greater NCWM participation in OIML activities. Estimated costs for international meeting participation will be approximately \$25,000. Therefore, the Executive Committee recommended that \$12,500 of NTEP funds be set aside to provide additional U.S. participation in the OIML process.

At the Annual Meeting, Samuel Chappell of NIST provided the Committee with an updated status report on OIML activities (see Appendix F).

Part II - NTEP Board of Governors

102-1 I Plans for NTEP to Issue an OIML Certificate

This is carried over from the Committee's 1994 Report in which it was Item 102-6.

The NIST Force Group completed modifications to its test protocol to be able to provide OIML R60 tests for load cells. Force Group staff reported that they achieved equivalent test results on a load cell that had previously been tested by the Netherlands. The NCWM Executive Secretary notified Sam Chappell, U.S. OIML Representative, that the National Type Evaluation Program is prepared to offer OIML R60 Certificates, and Dr. Chappell informed the International Bureau of Legal Metrology (BIML) that the National Type Evaluation Program is the Issuing Authority for the United States for load cells. U.S. manufacturers can now have both tests done at one location.

NTEP customers have asked that NTEP provide OIML Certificates for Recommendation 76 for non-automatic weighing devices so that U.S. weighing device manufacturers can obtain entry into global markets. OIML R76 evaluations require electromagnetic tests. A significant investment was made by NIST Technology Services Director Peter Heydemann to

purchase electromagnetic testing equipment for one NTEP Participating Laboratory. Electromagnetic interference tests must still be contracted to an outside laboratory.

NTEP conducted a survey of NTEP CC holders, and Ohio was voted as the first choice for OIML testing (23 votes), with California a close second (20 votes). Maryland and New York were distant third and fourth choices. Outside contractor laboratories that can conduct both the electromagnetic interference and other electromagnetic tests required for OIML Recommendation 76 will be sought so that both Ohio and California can provide OIML Certificates.

Representatives from the Ohio and California NTEP Participating Laboratories, NIST OWM, and LMB Canada plan to visit European laboratories this summer or fall to observe OIML R76 tests. A training session was conducted in Columbus, OH, in June 1994, by Otto Warnlof, NIST, Office of Standards Management, to review the R76 test procedures and preparation of the certificate. John Elengo, consultant, has contracted with OWM to document that the elements of quality assurance are in place in the NTEP system so as to comply with ISO 25 guidelines.

102-2 I U.S. - Canada Mutual Recognition of Type Evaluation Program Report

The U.S. - Canada Mutual Recognition of Type Evaluation Program began on April 1, 1994. See Item 101-7 in the Committee's 1994 Report for a copy of the Mutual Recognition Agreement. At least one NTEP Certificate of Conformance and a Canadian Notice of Approval have been issued under this program since its start. At its October 1994 meeting, the National Type Evaluation Technical Committee (NTETC) Measuring Sector discussed the need to broaden this agreement to include measuring devices. An analysis of the Canadian, U.S., and OIML requirements will be made before a meeting in April, 1995, in Ottawa to determine priorities and directions. The NTETC Weighing Sector discussed broadening the areas of mutual recognition at its December 1994 meeting. The Weighing Sector and Canadian representatives agreed that the Mutual Recognition program could be immediately broadened to include weighing systems with capacities up to 1000 kg. More complex weighing devices will need further intercomparison of requirements.

A meeting was held April 10 to 12 in Ottawa, Canada, to discuss type evaluation tests for measuring devices. Representatives from the NIST Office of Weights and Measures, NTEP State laboratories, Canada's Legal Metrology Branch, and industry reviewed a comparison of U.S. and Canadian requirements and type evaluation tests for measuring devices compiled by Renald Marceau. One significant difference identified is that Canada does temperature tests on measuring devices and the United States does not. In addition, differences were noted between the requirements of the two countries for on-site versus laboratory testing of devices. All of the differences identified at the meeting will be documented, and another meeting will be held to address the differences and discuss type evaluation policy and procedures for measuring devices.

At the April meeting, it also was decided that the weighing program could be expanded in the future to include: 1) mechanical scales, 2) complex indicators, and 3) computing scales.

102-3 VC Policy: U.S. - Canada Mutual Recognition of Type Evaluation Program

(This item was adopted as part of the consent calendar.)

Recommendation: Adopt the policy proposed by the National Type Evaluation Technical Committee (NTETC) Weighing Sector in December:

A manufacturer may request two separate evaluations on a device, rather than using the joint protocol developed by the U.S.-Canada Mutual Recognition Work Group, which tests the device to the most severe requirements wherever possible. This protocol was developed to save time for the laboratory and cost to the manufacturer. If the manufacturer requests separate evaluations, separate application numbers will be assigned, scheduled, and tracked.

If a manufacturer requests an evaluation for one country and then, after that evaluation is completed, requests another evaluation for the other country, the second evaluation will be considered to be a new request for evaluation, even though the device is available in the testing laboratory, and will be placed at the end of queue.

A device manufacturer may seek a single evaluation for either Canada or the United States by applying to either Canada or the United States. For example, a device manufacturer can apply to Canada for a U.S. evaluation or to the United States for a Canadian approval.

Background: When the U.S.-Canada Mutual Recognition of Type Evaluation Program was first established, the NTEP Participating Laboratory and Canadian representatives devised test procedures with the understanding that only devices for which approval in both nations was being sought would be accepted under the Mutual Recognition Program.

A 300 percent overload test had been the first step in the protocol developed for the mutual recognition program for small scales. One manufacturer feared that this test might have caused the device to subsequently fail the evaluation; therefore, he requested that separate evaluations be conducted first for U.S. approval and then for Canadian approval. Since the joint protocol had been developed, the U.S. Participating Laboratory was uncertain whether separate tests could be performed within the framework of the mutual recognition program. The NTETC Weighing Sector met in December 1994 in order to carry out the broader policy statement that was adopted at the 79th Annual Meeting in July 1994. The Sector considered how the test procedures would have to be modified if manufacturers requested two separate tests (e.g., one complete test to Canadian requirements and one complete test to U.S. requirements) rather than have the device subjected to the test protocol that was developed by the U.S./Canada Mutual Recognition Work Group.

In discussions at the NTETC Weighing Sector, test methods were changed and the U.S.-Canada policies were reviewed. Canada informed the NTETC Weighing Sector in December that the 300 percent overload test (part of the Canadian test procedure) could be conducted at the end of the test protocol. At the Interim Meeting, Canada told the Board of Governors that it had decided to recommend deletion of the 300 percent overload test. The Board believes these changes to the test protocol will remove the need for manufacturers to request separate evaluations. Neither the United States nor Canada believes that it would be in the best interests of a manufacturer or of the type evaluation program of each nation to separately evaluate devices against each nation's requirements.

The NTEP Board of Governors reaffirms the U.S.-Canada Mutual Recognition of Type Evaluation Program policy that type evaluations will be assigned to Canada in order to ensure that adequate work is apportioned to Canada.

102-4 I Adoption of Uniform Regulation for National Type Evaluation by the States

Daryl Tonini, Scale Manufacturers Association (SMA), updated the Board of Governors on the status of SMA's drive to assist States to adopt the Uniform Regulation for National Type Evaluation (URNTE) and the Uniform Regulation for the Voluntary Registration of Servicepersons and Service Agencies (VRR). The map on the next page indicates the level of adoption of each regulation.

The Uniform Regulation for National Type Evaluation is being revised. A draft of the revision is included in the Laws and Regulations Committee's interim report. Many sections in the proposed regulation address policy issues still being standardized by the NTEP Board of Governors and the regulating States. Therefore, the L&R Committee will carry the item over as an informational item for further development.

During the Annual Meeting, Daryl Tonini provided the Committee with an updated status report on the adoption of the URNTE.

Status of Type Approval and URNTE Adoption
As of 7/1/95



102-5

VC NTEP Policy: NCWM Publication 14, Part I, Administrative Procedures

(This item was adopted as part of the consent calendar.)

Recommendation: Adopt the revised Administrative Procedures, Part I, appearing in Appendix D.

Background: NCWM Publication 14 was last published in its entirety in 1989. A new complete edition is being readied for publication. At the 1994 Annual Meeting, a redlined version of Part I, Administrative Policy and Procedures, was provided to members of the NTEP Board of Governors for their review; in this version, all the policy adopted by the Board since 1989 was shaded (redlined). A redlined version and a version with no shading was made available at the Interim Meeting. The redlined version appears as Appendix D. The Board has reviewed the entire policy as it now stands to ensure that it meets the needs of NTEP and its customers. Because the most recent edition was published in 1989, and because Part I was not republished after every modification and revision individually adopted by the Conference, the entire revision is printed in Appendix D for adoption as a whole.

Since different sections need to be modified at different times, every page of the new publication will be dated. Expected publication date is March 1995. Subsequent updates will be made and dated section by section, with the table of contents printed and distributed annually, noting the latest publication dates so that users of Publication 14 can determine whether they have the most recent versions. NTEP will charge for sections and for the total Publication 14 on a cost-reimbursable basis.

102-6A

V NTEP Policy: Due Process to be Followed When It Is Claimed that Production Does Not Meet Type

(This item was adopted.)

This is carried over from the 1994 Report, in which it was Item 102-2.

Recommendation: Adopt the following revision to NTEP Administrative Policy to provide for due process when claims are made that an NTEP CC should be withdrawn.

6. Post-Evaluation Responsibility of Manufacturer

As a result of requesting an evaluation and accepting the Certificate of Conformance, the manufacturer implicitly claims that all devices manufactured as the type referenced in the Certificate of Conformance are the same type. If a production device with a model number corresponding to that referenced in the Certificate of Conformance is found not to conform to the type, the Certificate of Conformance may be withdrawn.

Questions regarding the conformance of manufactured devices to the type for which a Certificate of Conformance was issued will be addressed using the existing verification system based on the following premises:

- a. current NTEP policies are sufficient to address production devices;
- b. NTEP is limited to the initial type evaluation of devices but is intended to work with enforcement programs to provide feedback and validation of type (a Certificate may be withdrawn because production is not equivalent to the type) (see Part M.5. Feedback);
- c. the field enforcement process and verification of production using NTEP administrative resources is responsible for ensuring that production devices comply with Handbook 44 (this may include obtaining production devices or components and subsequent evaluation of these devices or components); and

- d. weights and measures field enforcement officials, service technicians, service agencies, manufacturers, and other industry may report in writing to the NTEP Board of Governors that devices in service do not comply with Handbook 44 or are not traceable to the NTEP Certificate of Conformance. However, in these cases, noncompliance must be verified by NTEP; and
- e.d. if
 - (i) the field verification process reveals a history of abnormally high device failure; or
 - (ii) the field verification process reveals that production devices do not match the type for which the Certificate was issued are not traceable to the NTEP Certificate of Conformance; or
 - (iii) subsequent laboratory evaluation of the device or component reveals that it does not comply with the influence factors requirements specified in Handbook 44, this information may be used by the NTEP Board of Governors in withdrawing a Certificate of Conformance for cause.

Prior to the withdrawal of a Certificate of Conformance by the NTEP Board of Governors, the manufacturer will be notified in writing of the reason for the proposed withdrawal of the Certificate of Conformance. The manufacturer has 30 days to appeal in writing to the NTEP Board of Governors and has the opportunity to show that production devices meet type and comply with Handbook 44. This process may include:

- a. submitting a production device or devices to NTEP for reevaluation (the cost of which will be borne by the manufacturer);
- b. submitting adequate information and data to NTEP to show that the quality assurance procedures in place in their manufacturing process show compliance with Handbook 44 and that production meets type;
- c. other means determined acceptable by the NTEP Board of Governors.

Background: The Chairman pointed out that further clarification is needed as to who can report compliance information to NTEP and how NTEP will evaluate the information received.

102-6B I NTEP Policy: Verification that Production Meets Type

The integrity of NTEP and of some NTEP Certificates of Conformance are being challenged. States report that some installed devices do not conform to their Certificates. Manufacturers also report noncompliance of competitors' devices. NTEP labs have found devices and main elements that differ from the original type. NTEP needs to establish a means of evaluating production devices to ensure that production meets type. It would be difficult, mainly due to lack of NTEP funding, to reevaluate all models covered by an NTEP CC. However, NTEP should at least reevaluate suspect models to preserve the integrity of NTEP.

The Board believes that a more rigorous system is needed to ensure that production devices and components match the original types. The original intent was that State enforcement agencies would provide such assurance. As Publication 14, Subpart K.2., Feedback, reads:

"The evaluation process under NTEP can generate only limited data. The data gathered during the initial and subsequent verifications of a larger number of devices of a given type will, when systematically analyzed, often yield information not available from the type evaluation. Such feedback can be used as the basis for revising the conditions of approval when the situation so warrants."

"Depending on circumstances, experience gained during verifications may justify later changes in the Certificate of Conformance; in extreme cases, it may dictate reevaluation of the type."

The Board of Governors discussed what action should be taken to monitor the compliance with the influence factors requirements of both scales and load cells in production. It was understood that compliance with the influence factor requirements cannot be determined by ordinary field testing. For example, in a series of evaluations on production floor scales conducted last year, as many as six scales out of eight failed accurate temperature requirements at -10 °C. Although floor scales may be used at low temperatures, weights and measures field inspections are rarely conducted in such extreme conditions.

However, the floor scale results challenge the integrity of NTEP. The Board of Governors feels that a Certificate should be withdrawn when production devices do not match type. Unfortunately, many scales complied with Handbook 44 at room temperature, while most of the scales failed at low temperature; this indicates how difficult it would be to determine full compliance in the field. John Robecek, Mettler-Toledo, presented mathematical information suggesting that a totally independent sample of two production devices could indicate within 95 percent confidence that, if both failed type evaluation tests, the production devices do not match type.

In many other areas of weights and measures, the NCWM has noted the need for national data sharing. This is a prime area needing field data from all over the nation to feed back to NTEP to identify possible problems indicating that production does not meet type.

Should NTEP Consider Production Quality Assurance Data or In-Plant Sampling and Testing?

As an augmentation of field verification, the Board discussed additional approaches to verify that production meets type. One possibility is voluntary cooperation by manufacturers with in-plant inspection visits by NTEP. Although some manufacturers will cooperate with this approach, not all are in favor. Other conformity assessment organizations, such as Factory Mutual (FM) and Underwriters Laboratories (UL), have procedures contractually in place to sample from manufacturers' products to determine that production complies with type; NCWM could develop similar procedures. Mettler Toledo proposes that a voluntary program be initiated with NTEP and manufacturers to assure that production devices conform with their CCs. Mettler Toledo requests the opportunity to serve as a pilot manufacturer in this regard at their manufacturing plants to audit the quality assurance systems in place at their facilities.

The question of paying for sampling and testing production devices is of concern to the Board. Estimated cost figures will have to be developed to determine the role that voluntary sampling will have to play, or whether mandatory testing, similar to that required in UL or FM contracts, might have to be considered.

102-7A VC NTEP Policy: NTEP Name and Logo

(This item was adopted as part of the consent calendar.)

This is carried over from the 1994 Report in which it was Item 102-1.

Recommendation: Add the following text to NTEP Policy, Section S. References to NTEP, after items 2.a.(1) and 2.a.(2):

The NTEP statement or logo shall be used only in conjunction with products that have been certified in accordance with this publication and Handbook 44. The statement or logo shall never be used in any manner that could suggest or imply that certification extends to a product that is not NTEP-certified.

Where reference is made to NTEP or an NTEP CC, it is essential to clearly identify which products are NTEP certified if the copy also includes products that are not certified. Reference to NTEP must always be located in close proximity to any reference to a certified product when uncertified products are shown on the same page.

Background: Policy for the use of the NTEP name and logo is needed to protect the integrity of NTEP and eliminate false or misleading advertising that implies NTEP certification. A policy was drafted by Mettler-Toledo at the request of the Board and revised in time for review at the 79th Annual Meeting. The policy was reviewed by the Scale Manufacturers Association NTEP Integrity Committee, but not endorsed. The SMA recommends that the NCWM register the NTEP logo as a registered trademark. The Board of Governors agreed to pursue trademark registration.

102-7B I NTEP Policy: Examples of Appropriate Use of NTEP Logo

The Board endorses the general principles and guidelines of fair marketing embodied in the Mettler-Toledo draft; however, the Board does not want to establish the kind of administrative structure that the proposal would require. The proposal would require an officer of a company holding a Certificate of Conformance to sign an annual advertising agreement with NTEP. The Board recommends that the following examples developed by Mettler-Toledo (Annex A of

their proposal) be printed as an appendix to Part I in Publication 14.

Specific Examples for the Use of the NTEP Logo

Truck Scale

The Model XXXX Truck Scale meets or exceeds Class III L, 10,000 division accuracy requirements in accordance with the National Institute of Standards and Technology (NIST) Handbook 44. A Certificate of Conformance, Number XX-XXX, was issued under the National Type Evaluation Program (NTEP) of the National Conference on Weights and Measures.

Floor Scale

The Model XXXX Floor Scale meets or exceeds Class III, 5000 division accuracy requirements in accordance with the National Institute of Standards and Technology (NIST) Handbook 44. A Certificate of Conformance, Number XX-XXX, was issued under the National Type Evaluation Program (NTEP) of the National Conference on Weights and Measures.

Indicating Element

The Model XXXX Weight Indicator meets or exceeds Class II, 60,000 division and Class III/III L, 10,000 division accuracy requirements in accordance with the National Institute of Standards and Technology (NIST) Handbook 44. A Certificate of Conformance, Number XX-XXX, was issued under the National Type Evaluation Program (NTEP) of the National Conference on Weights and Measures.

Load Cell

The Model XXXX Load cell meets or exceeds Class III L, 10,000 division accuracy requirements in accordance with the National Institute of Standards and Technology (NIST) Handbook 44. A Certificate of Conformance, Number XX-XXX, was issued under the National Type Evaluation Program (NTEP) of the National Conference on Weights and Measures. The Certificate of Conformance specifies the maximum number of scale divisions (n_{MAX}), load cell verification interval (v_{MIN}), and capacities for the Model XXXX load cell family.

The Committee intends to make this a voting item next year. It will consider the concerns raised by GPMA and the Grain Moisture Sector.

102-8 VC NTEP Policy: Remanufactured and Repaired Devices

(This item was adopted as part of the consent calendar.)

Recommendation: Add the following to NTEP Policy, Part I, NCWM Publication 14:

- a. If a company or individual makes changes to a device to the extent that the metrological characteristics are changed, that specific device is no longer traceable to the NTEP CC.
- b. If companies or individuals repair or remanufacture a device, they are obligated to repair or remanufacture it consistent with the manufacturer's original design; otherwise, that specific device is no longer traceable to the NTEP CC.

Background: Determining whether the original NTEP CC applies to a device after "remanufacture" or "repair" has been a concern for some time. Discussions centered on whether remanufactured devices can be defined as those devices which have been (a) moved from their original location; (b) sold by one owner to another; or (c) serviced (with parts replaced or repaired) by other than the original equipment manufacturer. Discussions at regional weights and measures meetings indicated that these definitions were not enforceable by field weights and measures officials.

At the October 1994 meeting, the NTETC Measuring Sector reviewed the existing policy for remanufactured measuring equipment and concluded that the existing policy was unenforceable. They recommended to the Board of Governors that the policy for remanufactured measuring equipment be replaced with the following (some rewording was done by NCWM Chairman and Executive Secretary):

- a. If a company or individual makes changes to a device to the extent that the design is changed, the device is no longer covered by that CC.
- b. If a company or individual repairs a device, they are obligated to repair it consistent with the manufacturer's original design; otherwise, that device is no longer covered by that NTEP CC.
- c. It is up to the weights and measures jurisdiction to report to NTEP when the design has been changed.

This issue was discussed at the NTETC Weighing Sector meeting in December 1994 for the purpose of developing recommendations to the Board concerning weighing equipment. The SMA devised the language the Board is recommending to the NCWM. This policy augments existing policy concerning the repair and remanufacture of load cells.

102-9 I NTEP Policy: Separate CCs for Software

Recommendations:

- A. NTEP will continue to evaluate stand-alone software with the same procedures used to evaluate software that is part of a measuring or weighing system. NTEP will generally evaluate equipment to the first indicated or recorded representation of the final quantity on which the transaction is based. Software is not evaluated in terms of its computer compatibility or other standard.
- B. The Board of Governors endorses the establishment of a software work group composed of volunteers from weighing, measuring, and other sectors, as well as participants from the NTEP Participating Laboratories, the S&T Committee, and Canada.

Background: The Scale Manufacturers Association asked the NTEP Board of Governors to look at the issue of software as it applies to NTEP. Concern was expressed over the NTEP policy of issuing separate CCs for software. Although the issue was initiated at SMA's request, it applies to all types of devices. As part of the Weighing Sector meeting in December 1994, the Board of Governors met with the NTETC Weighing Sector and significant portions of the Measuring Sector on the issue of NTEP CCs for software.

Evolution of Component Evaluation:

At one time, NTEP issued Certificates of Conformance only for complete devices. However, manufacturers wanted the flexibility of "mixing and matching" components of systems, such as indicating elements and weighing elements, or indicating elements and meters, with their own and other manufacturers' components. This approach extended to software in electronic equipment. For example, NTEP initially evaluated electronic cash registers as complete systems and issued CCs to cover both the hardware and software used in the systems, but manufacturers began to request separate CCs for the software used in these systems. This gave the manufacturer the flexibility to offer software that could be installed on compatible hardware already owned by the device user. These CCs have been issued either to the manufacturer of the hardware on which the software is installed or to the company that writes the software (sometimes referred to as "third-party software") for use on compatible hardware. For personal computer-based systems, an NTEP CC on the software provides the user the flexibility of employing equipment already used for other business functions to interface with and control weighing and measuring equipment.

How Software is Evaluated:

Questions have been raised about the criteria that should be applied to evaluate software during an NTEP evaluation. In discussions as to whether or not a separate checklist is needed to evaluate software, NTETC decided that a separate set of criteria is not needed. NTEP evaluation of the software determines whether or not a device using the software complies operationally with the applicable requirements of Handbook 44. Software controls the functioning of an

electronic device, and it was determined that, whether evaluating a complete device or evaluating the software alone, the same checklist can be used to evaluate either.

Most electronic weighing and measuring devices use software as the means of performing basic device functions; software is the critical element in the operation of any electronic system. NTEP has seen a wide range of capabilities in software-based equipment, including devices that use software programmed by the manufacturer and not intended to be modified by the user; devices offering a menu of options from which the user selects ("user-configurable software"); and devices using software that can be modified by the user ("user-programmable software").

Field Examination Issues:

Related to NTEP evaluation of software is how weights and measures field enforcement officials can identify, operate, and test software installed in the field. Software must meet the same identification requirements of the General Code G-S.1. as hardware: name, initials, or trademark of the manufacturer; model designation; nonrepetitive serial number; and words identifying the serial number as such. Typically this information is either displayed on the screen or can be recalled by pressing a function key. Weights and measures officials may have to verify whether the software is covered by an NTEP CC since the CC may be issued for the software only. The NTEP CC will provide some information concerning how to operate the system, but additional information is needed in examination procedure outlines to guide the official, including how to determine whether or not a system is covered by an NTEP CC or whether an NTEP CC applies to separate components, including separate software. Finally, an issue that repeatedly concerns weights and measures officials is how to determine whether metrologically significant changes have been made to software, whether or not it has its own CC.

Work Group Formed:

In December 1994, a work group was formed to address this issue. Michael Adams, Fairbanks Scales, was named Chairman. The work group had its initial meeting in April 1995 and a second meeting during the 1995 Annual Meeting. The work group is scheduled to report on progress to the NTETC Sectors late in 1995.

102-10 I NTEP Participating Laboratories and Evaluations Report

This was item 102-10 in the NTEP Board of Governors Interim Meeting agenda.

A report on the NTEP Participating Laboratories was given by NTEP Administrator Lynn Sebring, of NIST, OWM. There was an increase in the total number of NTEP Certificates issued in 1994 (203) as compared with 1993 (177). The backlog of remaining evaluations decreased slightly from 136 in 1993 to 133 in 1994.

During the Annual Meeting, Lynn Sebring, gave the Committee an updated report on the progress of the Participating Laboratories (see Appendix E).

102-11 I NTETC Weighing, Measuring, and Belt-Conveyor Scale Sector Reports

This was item 102-11 in the NTEP Board of Governors Interim Meeting agenda.

Weighing, Measuring, and Belt-Conveyor Scale Sector meetings were held this fall. Reports of these meetings will be incorporated in the Executive Committee Final Report appendices when they have been finalized. Throughout the Interim Meetings, the Board of Governors discussed improvements to the meeting and report process for the different NTEP customers. Conclusions reached are reported below.

Process of Meetings

The NCWM approach is to achieve consensus (which is roughly defined as greater than a simple majority but less than unanimity) as much as possible on all issues rather than to vote on every issue and determine a final recommendation based on a simple majority. Therefore, sector chairmen seek to avoid votes as much as possible. Instead, they announce the consensus as they determine it on an item-by-item basis.

Process of NTEP Participating Laboratory use of NCWM actions:

- NTEP Participating Laboratories use results of Annual Meeting results of S&T Committee votes immediately after Annual Meeting.
- NTEP Participating laboratories use results of NTETC sector meetings immediately after conclusion of meetings (unless meeting results in recommendation for action by another group within the NCWM).

Meeting Conclusions Need More Timely Publication

Unfortunately, the sector and other meeting reports have been delayed in many cases so much that participants forget the details of the meeting and sometimes have different recollections of the decisions made. Therefore, the Board of Governors requests that a summary of decisions and actions be prepared within 10 days of each meeting (ideally before the meeting adjourns) so that participants, NTEP Participating Laboratories, and other interested parties, including potential NTEP CC applicants and the NTEP Board of Governors are aware of the changes that NTEP Participating Laboratories will be implementing.

102-12 I Program, NTETC Sectors on Grain Moisture Meters and Protein Analyzers

This was item 102-12 in the NTEP Board of Governors Interim Meeting agenda.

See Item 102-7 from the 1994 Report for background information. The first grain moisture meter to have met Phase I evaluation under the National Type Evaluation Program will soon be issued an NTEP Certificate of Conformance. Although grain moisture meter manufacturers expected to obtain immediate approval of their prototypes during the Spring of 1994, several models required retesting. Because the additional testing necessitated the use of many of the grain samples saved for Phase II of the type evaluation process, the National Calibration Program had to be delayed until June of 1995. A notice was sent to grain moisture meter manufacturers to announce the delay in calibration start-up.

An Interagency Agreement has been signed by the U.S. Department of Agriculture Federal Grain Inspection Service (now the Grain Inspection, Packers and Stockyards Administration [GIPSA]) and NIST to provide funding for the National Calibration Program for 5 years. This program will begin June 1995.

The GIPSA Kansas City laboratory will soon be authorized as the NTEP Participating Laboratory for Near-Infrared Grain Analyzers.

An update on the status of the moisture meter evaluations was provided by Richard Pierce, GIPSA, during the Annual Meeting. Dr. Pierce reported that Certificate of Conformance Numbers have been issued to four models of grain moisture meters and successful testing has been completed on a fifth device. He also indicated that three of these instruments were resubmitted and successfully retested to extend the allowable temperature difference between the instrument and the grain sample. A new submission was received in late May for complete NTEP testing.

Phase II of the NTEP Grain Moisture Meter Program (the Ongoing Calibration Program) is underway, and calibration data is being collected for five grain moisture meter models.

102-13 W NTEP Policy: NTEP Advisory Committee

(This item was withdrawn.)

The following subject was discussed during the course of other items. It was not included in the Executive Committee or NTEP Board of Governors agenda.

One NTETC Weighing Sector member recommended that the "NTEP Advisory Committee," the Associate members on the National Type Evaluation Technical Committee, be consulted by the NTEP Board of Governors or that the NTEP Policy creating the Advisory Committee be revised. One recommendation by this member was to take a separate vote of the Associate membership when votes are taken. Other Associate members of the NTETC Sectors noted that names are called when votes are taken so that the results are recorded and can be analyzed according to public and private representative votes. However, one Sector member recommended against separate votes being taken too obviously; he

declared that he was satisfied with the present policy. The Board will continue to discuss best ways to use the expertise of the NTEP Advisory Committee.

At the Annual Meeting, the Board decided to withdraw this item because no input on it had been received from industry or from weights and measures officials.

J. Truex, Ohio, Chairman

T. Geiler, Barnstable, MA, Chairman of the NTEP Board of Governors

C. Gardner, Suffolk County, NY, Treasurer and Chairman-Elect

B. Adams, Minnesota

B. Bloch, California

S. Colbrook, Illinois

C. Fulmer, South Carolina

J.A. Rogers, Virginia

A. Thompson, Alaska

G. Ugiansky, NIST, Executive Secretary

J. Koenig, NIST, Technical Advisor

R. Magnan, Canada Legal Metrology Branch, Advisor when meeting as Executive Committee

Executive Committee

Appendix A

Associate Membership Committee Proposal for Associate Member Representatives On the Standing Committees

The Associate Membership of the NCWM proposes the creation of one Associate Member Representative (AMR) position for each of the following NCWM committees: Executive, Education, Laws and Regulations (L&R), and Specifications and Tolerances (S&T). AMC support for this proposal was unanimous at the AMC meeting held during the 79th Annual Meeting of the NCWM. We propose that AMR's on each specified committee serve a 3-year term. This proposal will require modifications to the existing NCWM Bylaws and to the AMC Bylaws.

At the 78th National Conference in Kansas City, 1993, Chairman Geiler discussed the impact of reduced funding and staffing on the Conference and the need for everyone in the public and private sectors to participate in the NCWM to the fullest. Generally, the Associate Membership has felt that our ability to contribute to the NCWM was underutilized.

The abolition of the NCWM Liaison Committee at the 79th Annual Meeting eliminated the Associate Membership's one formal role in the NCWM at the Standing Committee level, leaving this constituency, comprising approximately 52 percent of the Conference, without formal representation.

The proposal presented by the Associate Membership is believed to adhere to the guidelines set forth by AMC Chairman Guay:

1. Any proposal must be carefully and thoughtfully developed; it must be complete and thorough.
2. It must have broad-based input and acceptability to industry.
3. It must be fair to ALL industry. It must not provide any firm or group of firms with an undue competitive advantage.
4. It must benefit the NCWM.
5. It must be sustainable for the AMC and the NCWM. There must be long-term commitment to the plan's implementation.
6. It must be actionable.

The AMC has obtained a opinion on the legal implications to the NCWM and the Associate Membership of this proposal: the Boston law firm of Cosgrove, Eisenberg, and Kiley identifies no material legal issues. There are many other industry/government instances where industry representative roles have been and are being used successfully.

The AMC recommends the following:

1. Creation of one Associate Member Representative (AMR) position on each of the following NCWM committees: Executive, Education, Laws & Regulations (L&R) and Specifications and Tolerances (S&T).
2. Designation of AMRs as Nonvoting Members.
3. Designation of AMR role as a 3-year position.
4. AMR election/appointment will be consistent with existing NCWM procedures for committee election/appointment. The AMC will propose AMR candidates to the NCWM Nominating Committee (for the Executive Committee) and to the Conference Chairman (for the other standing committees).
5. AMR candidates must be NCWM Associate members.

6. AMR candidates require approval by a minimum 2/3 majority of Associate members present at an openly scheduled AMC meeting.
7. The Chairperson of an NCWM committee can exclude the AMR from participation on issues/discussions viewed as confidential.
8. With the NCWM Chairperson's concurrence, an AMR can select an AMR Alternate (AMRA) or "Backup" to temporarily participate in committee discussions in place of the AMR.
9. The AMR's organization will be responsible for the AMR's travel-related expenses. The NCWM will not be responsible for reimbursing these expenses.
10. Issues of AMR misconduct or "unfair advantage" will be mediated by the Conference.

AMR's are intended to provide industry perspective on items and issues coming before the NCWM committee on which they serve. This will provide important advantages to the NCWM, including enlisting industry input and resources on subjects such as conference policy, planning, management, and outreach and more efficient information flow on issues between NCWM meetings. Generally, the responsibilities of the AMR are as follows:

1. An AMR's responsibility is to serve an NCWM committee in both advisory and intermediary roles, providing general industry perspective and facilitating industry/committee communication.
 - A. An AMR does not represent any particular organization or group but rather represents all interested persons within the jurisdiction of the assigned committee.
 - B. The AMR represents all members of an industry, not any particular association or company. If a matter comes before the committee that directly or indirectly affects the organization employing the AMR, the AMR should inform the committee but need not be absent from the discussion or abstain from participation.
 - C. The AMR, having unique knowledge of relevant industry practice, should serve as an additional intermediary between the committee and interested persons whom the AMR represents, facilitating more efficient review of items.
 - D. The AMR may not engage in unseemly advocacy or attempt to exert undue influence over the other members of the committee. An AMR may be removed for good cause (excessive absenteeism, demonstrated bias that interferes with objective advice, violation of applicable rules and regulations).
2. An AMR is a nonvoting member of the NCWM committee. The AMR cannot participate in votes pertaining to committee issues or policies.
3. An AMR will not have access to data and information that constitute trade secrets or confidential commercial or financial information.
4. An AMR is subject to and shall abide by all rules and regulations adopted by the NCWM and the committee.

Proposal: The AMC recommends the following changes to the NCWM Bylaws: Underlined text is proposed to be added. Cross-through text is proposed to be deleted.

Article V; § 2; A Membership (other than Executive, Finance, and Credentials Committee)

The membership of each of the standing committees is a normal complement of five members appointed by the Conference Chairman from the active membership on a rotating basis for 5-year terms, or until a successor is appointed, and one nonvoting member appointed by the Conference Chairman from the Associate Membership for a 3-year term.

Executive Committee

When it is necessary to make an appointment to any of the standing committees to fill a vacancy caused by the death, resignation, or retirement from active service by a committee member from the active membership, the appointment is for the unexpired portion of the member's term. Such an appointment from the Associate membership would begin a new 3-year term.

Article V; § 2; B

The Executive Committee consists of the President, Executive Secretary, the Conference Chairman, the Chairman-Elect, the most recent still active Past Chairman, the Treasurer, ~~and~~ six members elected at large from the active membership ~~the latter~~ to serve 3-year staggered terms, and one member elected from the Associate Membership.

The President, ~~and~~ Executive Secretary, and Associate Member Representative do not have votes on matters before the Executive Committee.

Appendix B - NCWM Budgets for 1995 & 1996

Budget for 1995 (Jan 1 - Dec 31) Compared with 1994 Actual and 1994 Budget

Table 1. Income

Category Number	Account Description	FY 94 Budget	Proposed FY 95 Budget	FY 94 Actual
General Funds				
411	Registration Fees	\$66,000	\$69,000	\$71,665
412	Membership Fees	\$122,500	\$129,500	\$127,315
413	Interest	\$1,000	\$1,000	\$2,361.47
414	Associate Membership Account	-0-	-0-	-0-
416	Other Income	-0-	-0-	\$188.45
410	Income, General Fund	\$189,500	\$199,500	\$201,530.72
Expense & Income (Reimbursable)				
481	Special Events	\$2,000	\$2,000	\$2,485
482	Publications	\$20,000	\$3,500	\$5030.93
484	NTP, Seminars	\$6,000	-----	\$3,800
485	Promotional	\$2,000	-0-	-0-
486	Grain Equipment Cooperative Agreement	\$15,000	-----	\$4,645.32
480	Income, E&I	\$45,000	\$5,500	15,961.25
Total Income				
400	Total Income	\$234,500	\$205,000	\$217,491.97

Carryover from 1993: \$42,798.10

Table 3. Expenses

Category Number	Account Description	FY 94 Budget	Proposed FY 95 Budget	FY 94 Actual
General Funds				
511	Annual Meeting	\$44,000	47,200	\$39,979.69
512	Interim Meeting	\$35,500	31,000	\$25,658.53
513	Travel - Committees	\$24,000	33,500	\$24,865.78
514	Travel-Task Forces/Special Committees	\$17,700	\$22,000	\$5,492.60
515	Chairman/Chair Elect	\$22,000	20,500	\$18,432.08
516	Administration	\$36,500	23,500	\$19,679.42
517	Printing/Publications	\$8,500	\$19,500	\$7,487.40
518	Training & Train-the-Trainer	-0-	-----	-0-
510	Expenses, General Fund	188,200.00	\$197,200	\$141,595.50
Expense & Income (Reimbursable)				
581	Special Events	\$2,000	\$2,000	-0-
582	Publications	\$13,500	\$3,500	\$3,074.30
584	NTP, Seminars	\$6,000	-----	\$3,371.30

Category Number	Account Description	FY 94 Budget	Proposed FY 95 Budget	FY 94 Actual
585	Promotional	\$1,000	-0-	-0-
586	Grain Equipment Cooperative Agreement	\$15,000	-----*	\$9,780.04
580	Expenses, E&I	37,500.00	5,500.00	\$16,225.64
	Total Expenses			
500	Total Expenses	225,700.00	202,700.00	\$157,821.14

Table 6. NTEP Accounts**INCOME**

Category Number	Account Description	FY 94 Budget	Proposed FY 95 Budget	FY 94 Actual
483.1	NTEP: Logo Sales	\$1,500	\$1,000	\$1,400
483.2	NTEP: Maintenance Fee	\$87,500	\$105,000	\$79,000
483.3	NTEP: Publications Sales (Publication 5)	\$10,000	\$10,000	\$9,804
	Carryover from 1993			\$86,600
483	NTEP Operations	\$99,000	\$116,000	\$176,804

483: The fall of 1993 was the first time we collected an NTEP maintenance fee. We had estimated 875 CCs would remain active and 1040 were maintained (\$104,000) by the end of January 1994 (*collected in FY 1993). We expect the number of CCs to the issued and maintenance fees to be paid to offset the loss of income from CCs allowed to become inactive next year. Therefore, we estimate 1995 maintenance fees to be \$105,000 (approximately matching income of 1994). Logo and Publication 5 are expected to generate another \$11,000 (shown under category 482 in 1993).

EXPENSES

583.1	NTEP Board of Governors	\$7,000	\$7,000	\$981.35
This account will pay for the event of a hearing on an appeal that might not be conveniently scheduled as part of the Interim or Annual Meeting. It also pays for meetings of the Board on other NTEP issues (1994 Software).				
583.2	NTETC: Weighing Sector	\$12,000	\$7,000	8,542.16
583.3	NTETC: Measuring Sector	\$5,000	\$5,000	\$2,288.54
583.4	NTETC: Belt Conveyor Scale Sector	\$3,500	\$3,500	\$1,723.19
583.5	Automatic Weighing Systems Work Group	\$6,000	\$10,000	\$3,668.98

Table 6. NTEP Accounts

Category Number	Account Description	FY 94 Budget	Proposed FY 95 Budget	FY 94 Actual
	Multiple Dimensions Device Work Group			
<p>The ongoing work of the sectors to develop and maintain type evaluation criteria, checklists, and policy requires from one to two meetings per year.</p> <p>583.2: The Weighing Sector costs were predicted too high for 1994 since it now appears that only one meeting per year will be necessary. Therefore, costs for a single meeting have been estimated for 1995 as well.</p> <p>583.4: The Belt Conveyor Scale Sector did not meet in 1993 but is expected to meet in 1994 and perhaps in 1995.</p> <p>583.5: The Automatic Weighing Systems Work Group reports to the Weighing Sector. When their work is concluded on systems for meat and poultry plants, they have been asked to develop type evaluation criteria for the shipping industry.</p> <p>No Account Number: It is expected that once a code is developed by the Multiple Dimension Devices Work Group (operating in 1994 under 513.3 S&T Committee), there may need to be developed checklists and type evaluation criteria under a new cost center in the NTEP accounts. No decision was made about this group because it was not known how close the group is to a tentative code in H44 and therefore what their needs in type evaluation criteria development might be.</p>				
583.8	U.S./Canada Mutual Recognition Work Group	\$10,000	\$22,500	\$4,550.46
<p>The two countries have been asked to expand in two specific areas: liquid measuring devices and to issue OIML certificates.</p> <p>Recommendation: OIML \$12,500 to be shared with NIST for international meetings for OIML</p>				
583.7	Participating Laboratory Conference	\$10,000	\$10,000	\$2,383.54
<p>It is hoped that the Participating Laboratories can meet as part of the U.S./Canada Mutual Recognition Work Group meetings, and these costs can then be reduced.</p>				
583.8	NTEP Personnel - cashier - clerk	\$22,000	\$20,000	\$750.95
<p>Since this is the first year for this program, we cannot yet predict what the specific external costs for maintenance of the NTEP Certificates will be.</p> <p>Costs for NTEP maintenance fee administration was inadvertently paid out of NCWM general account; before accounts closed out, approximately \$5,000 will be shifted to this account.</p>				
583.9	NTEP Publication Pub 5; Pub 14; Logo Printing	\$12,000	\$12,000	\$2,575.30
<p>The expense of printing Publication 5 was accounted in 582.2 in 1993.</p>				
583	NTEP Operations	\$87,500	\$107,000	\$27,464.47

Carryover 1994: \$149,348.47

Outstanding bills: \$10,000

Appendix B (Continued)

**NCWM Budget for 1996 (Jan 1 - Dec 31)
Compared with 1994 Actual and 1995 Budget**

Category Number	Account Description	FY 94 Actual	FY 95 Budget	Proposed FY 96 Budget
	INCOME			
410	General Revenues			
481	Registration Fees	\$ 71,915	\$ 69,000	\$ 72,000
411.1	Annual Meeting	50,315		
411.2	Interim Meeting	21,600		
412	Membership Fees	128,890	129,500	128,000
413	Interest	2,605.92	1,000	1,000
485	Other Income	188.45		
480	Service Revenues			
481	Special Events	2,485	2,000	2,000
482	Publications	5,030.93	3,500	1,500
484	NTP Seminars	3,800		3,000
485	Promotional	-0-	-0-	-0-
	TOTAL INCOME	\$219,796.92	\$205,000	\$207,500
	EXPENSES			
511	General Expenses			
511	Annual Meeting	\$ 39,979.69	\$ 47,200	\$ 50,000
512	Interim Meeting	25,032.03	31,000	33,000
513	Committee Meetings	24,865.78	33,500	40,000
513.1	Executive Committee	1,232.80		6,000
513.2	L&R Committee	-558.89		6,000
513.3	S&T Committee	11,395.48		5,000
513.4	Education Committee	10,524.61		11,500
513.7	Annual Committees	2,271.78		2,500
514	Task Forces & Special Committees	5,492.60	22,000	18,000
515	Chairman/Chairman Elect	18,432.08	20,500	20,000

Category Number	Account Description	FY 94 Actual	FY 95 Budget	Proposed FY 96 Budget
516	Administration	19,686.42	23,500	25,000
517	Printing and Publications	7,487.40	19,500	9,000
518	Train the Trainers	-0-	-0-	-0-
580	Service Revenues			
581	Special Events	-0-	2,000	2,000
582	Publications	3,074.30	3,500	1,500
584	NTP Seminars	3,371.30	-0-	3,000
585	Promotional	-0-	-0-	500
	TOTAL EXPENSES	\$147,421.60	\$202,700	\$202,000

Appendix B (Continued)**Proposed 1996 NTEP Budget with Category Codes**

600	GENERAL REVENUE	
600.1	Maintenance Fees	\$105,000.00
650	DEDICATED INCOME	
651	Grant-Grain Equipment Cooperative Agreement	5,000.00
660	SALES	
661	Publications	
661.1	Publication 14	10,000.00
661.2	Publication 5	10,000.00
665	NTEP LOGO	
665.1	Seals	1,000.00
670	INTEREST INCOME	
680	MISCELLANEOUS INCOME	
700	EXPENSES	
700	Administration	10,000.00
702	Personal Services	
705	Supplies	
710	BOARD OF GOVERNORS	10,000.00
710.1	Chairman Expenses	
710.2	Interim Meeting	
710.3	Annual Meeting	
710.4	Appeal Hearing	
710.5	Technical Committee Meeting	

715	PARTICIPATING LABORATORIES	6,000.00
720	INTERNATIONAL MEETINGS	
721	OIML	12,500.00
722	USA/Canada Work Group	10,000.00
725	SPECIAL COMMITTEES	
725.1	Software Group	1,500.00
730	TECHNICAL COMMITTEE - WEIGHING SECTOR	
730.1	Technical Committee Meeting	5,000.00
730.2	Automatic Weighing Systems	3,500.00
730.3	Multiple Dimensional Devices	3,500.00
731	TECHNICAL COMMITTEE - BELT CONVEYOR	
731.1	Technical Committee Meeting	2,500.00
740	TECHNICAL COMMITTEE - MEASURING SECTOR	
741.1	Technical Committee Meeting	5,000.00
750	EXPENDITURE OF DEDICATED FUNDING	
750.1	Grain Equipment Cooperative Agreement Committee	5,000.00
760	SALES	
761	Publications	
761.1	Publication 14	5,000.00
761.2	Publication 5	3,000.00
765	NTEP LOGO	
765.1	Seals	1,000.00
770	INTEREST EXPENSE	
780	MISCELLANEOUS EXPENSE	1,000.00
INCOME		\$131,000.00
EXPENSE		\$84,500.00

Appendix C. NCWM Membership Status Report and Composition of NCWM Mailing List (as of 6/30/95)

Category	NCWM Members			Nonmembers			Total NCWM Members and Nonmembers			% of total who are members		
	End of 1992-93	End of 1993-94	End of 1994-95	93	94	95	93	94	95	93	94	95
State	813	818	831				704	665	664	1517	1483	1495 ⁶
County	364	377	443				587	521	504	951	898	947
City	213	219	219				334	341	341	547	560	555
Subtotal	1390	1414	1488	5.2			1625	1527	1509	3015	2941	2997
US Industry	1647	1702	1893				17739	19732	19498	19386	21434	21391
Industry (foreign)	30	34	36				178	326	341	208	360	377
Subtotal	1677	1736	1929				11	17917	20058	19839	19594	21794
US govt	49	58	50				185	258	239	234	316	213
Foreign govt	28	36	41				124	151	172	152	187	213
State & local govt (not W&M)	37	39	52 ⁵				600	942	945	637	981	997
Subtotal	114	133	153				15	909	1351	1356	1023	1484
Guests								321	347	381	321	347
Total	3181	3283	3570¹	8.7	20772	23283	23085	23953	26566	26555²	13.2	12.3
												13.4

¹ As of membership closeout, 768 members (or 21%) are brand new, never having joined the NCWM previously. In March of 1990, retirees were made complimentary members of the NCWM. In 1991, retirees numbered 319; in 1995, they number 207 and are not included in the totals here.

² The large increase in the mailing list is due to the fact that we are keying in repair firms lists kept by States; this will continue (petroleum device repair firms continue to be entered in the database). Over 16,500 constituents have been added to the potential Associate Member category since January 1, 1991. We continue to recruit these individuals as members through ongoing marketing of NCWM, its resources, services, and publications. As of membership year closeout, 18.9% of the membership are shown to be new to NCWM, never having previously joined.

³ The proportion of weights and measures officials who are members has been increasing since the total number of officials has dropped (attrition, unfilled or abolished positions, for example, have impacted the total number of weights & measures officials).

⁴ As the number of potential associate members in the mailing list has grown, the proportion who are associate members has decreased.

⁵ A membership category was established to include State and local government employees other than weights and measures (e.g., consumer advocacy, law enforcement personnel, attorneys general, etc.).

⁶ Of the 1495 State employees, 237 (15.8%) are State Petroleum Program Personnel.

Appendix D
NCWM Publication 14, Section 1, Administrative Policy and Procedures

Redlined and Strikethrough Version
February 16, 1995

The following version of the National Type Evaluation Program Administrative Policy is shown as it differs from the last published version of 1989.

Added text is shown redlined (shaded), and deleted text is shown with strike-through.

Amendments and additions are shown with the year adopted below the modified text, for example, (Added 1992).

Several additions and modifications are recommended for editorial clarity. They are:

-Definitions for the Legal Metrology Branch and Notice of Approval for Canada and the U.S./Canada Mutual Recognition Program were added, as well as Appendix A, U.S./Canada Mutual Recognition Agreement.

-Conference members refer to the "National Type Evaluation Technical Committee" rather than the "Technical Committee for National Type Evaluation" so references were changed to the NTETC.

-The present organizational structure under the National Type Evaluation Program Board of Governors was added.

-Examples of devices to be submitted for type evaluation were added in table format as well as a new Section C, Devices to be Submitted for Type Evaluation. This new section is based on memoranda from NTEP Manager Henry Oppermann and the rewrites and redrafts appearing in the Applicant's Guide of the U.S./Canada Mutual Recognition of Type Evaluation Program.

-Appendix B, Authorized Areas and Other Services, was added.

These additions were made as an interim measure until an applicant's guide for NTEP can be prepared since the Administrative Policy is not fully explanatory for those initially contacting NTEP at the Office of Weights and Measures, NIST, nor at the Participating Laboratories for information about NTEP.

Part I

Administrative Procedures

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NOTE: Part I contains changes in Administrative Procedures as of June 1994 and supersedes the 1989 edition of Publication #14.

Administrative Procedures

A. Definitions

1. National Type Evaluation Program

A program of cooperation between the National Institute of Standards and Technology, the National Conference on Weights and Measures, the states, and the private sector for determining, on a uniform basis, conformance of a type (q.v.) with the relevant provisions of:

NIST Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices";

NIST Handbook 105-1, "Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures", "Specifications and Tolerances for Field Standard Weights (NIST Class F)";

NIST Handbook 105-2, "Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures", "Specifications and Tolerances for Field Standard Measuring Flasks"; or

NIST Handbook 105-3, "Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures, Specifications and Tolerances for Graduated Neck Type Volumetric Field Standards".

2. Type Evaluation

A process for the testing, examination, and/or evaluation of a type (q.v.) by a Participating Laboratory (q.v.) under the National Type Evaluation Program.

3. Type

A model or models of a particular measurement system, instrument, element, or a field standard that positively identifies the design. A specific type may vary in its measurement ranges, size, performance, and operating characteristics as specified in the Certificate of Conformance (q.v.).

4. Participating Laboratory

A Federal or a State Measurement Laboratory authorized by the National Institute of Standards

and Technology, in accordance with its program for the Certification of Capability of State Measurement Laboratories, to conduct a type evaluation under the National Type Evaluation Program. The National Institute of Standards and Technology is a Participating Laboratory.

5. Certificate of Conformance (U.S.)

A document issued by the National Institute of Standards and Technology based on testing by a Participating Laboratory, said document constituting evidence of conformance of a type with the requirements of this document and the NIST Handbooks 44, 105-1, 105-2, or 105-3.

6. Legal Metrology Branch (LMB), Industry Canada

The legal authority in Canada to examine, test, and approve devices under the Weights and Measures Act of Canada. Hereafter, when the term "Participating Laboratory" is used, it is understood to include the Weights and Measures Laboratory of LMB, Industry Canada for those devices subject to the U.S./Canada Mutual Recognition of Type Evaluation Program (q.v.).

7. Notice of Approval (Canada)

A document issued by Legal Metrology Branch, Industry Canada, said document constituting evidence of conformance of a type to the legal metrology requirements of Canada.

8. U.S./Canada Mutual Recognition of Type Evaluation Program

Both the United States (U.S.) and Canada operate type evaluation (q.v.) programs. Canada and the United States have reached a bilateral agreement by which, for certain types one country will recognize the examination and tests performed by the other country. This agreement is known as the U.S./Canada Mutual Recognition of Type Evaluation Program. See Appendix A for the agreement. On the basis of the evaluation and test results, each country will continue to issue its own (U.S.) Certificate of Conformance (q.v.) or (Canadian) Notice of Approval (q.v.).

B. Administration

The National Type Evaluation Program is operated by the following organizations.

1. Board of Governors

The NCWM Executive Committee acts as the NTEP Board of Governors and is responsible for the operation of this program, including the establishment of policy and procedures and the resolution of policy, technical and appeals issues. (See Bylaws, Article V, Section 5.)

2. Technical Committee on National Type Evaluation Technical Committee

The Technical Committee on National Type Evaluation Technical Committee (NTETC) consists of the NTEP Advisory Committee plus Active Members of the NCWM appointed by the NCWM Chairman. It is responsible for the development of test criteria and procedures for use in the evaluation process by the Participating Laboratories. The membership and voting status of the NTETC is as follows:

a. **Associate Members.** The NCWM Chairperson will appoint new Associate members on the advice of the sector chairperson and technical advisor. There is no fixed term for this representation; the Associate member will serve until removed by the NCWM Chairperson, by the sponsoring company, or when the member resigns. If one company owns another, or if two companies are owned by the same parent company, only one vote per parent company will be permitted. The company(ies) involved will decide who will vote. The Associate Members also serve as the NTEP Advisory Committee (see below).

b. Active Members.

(1) **Participating Laboratory Representation.** The NCWM Chairperson will appoint a voting representative from every NTEP Participating Laboratory conducting complete evaluations in the particular device sector. (Those performing only field tests will not necessarily be appointed.) There will be no fixed term for this representation.

(2) **S&T Committee Representation.** If funds are available, the NCWM Chairperson will appoint

a representative from the S&T Committee, based on the recommendation of the S&T Committee. The term of this member will be concurrent with his/her membership on the S&T Committee.

(3) Other Active Member Representation.

Additional Active members may be appointed (with voting status) by the NCWM Chairperson with the advice of the technical committee sector chairperson and technical advisor. If financially feasible, the NCWM will underwrite their participation to provide additional weights and measures perspective.

c. **Advisory Members.** The NCWM Chairperson will appoint appropriate representation from Federal agencies with the advice of the chairperson of the sector and its technical advisor. The Executive Secretary will appoint the technical advisor. Advisory members have voting rights within the sector.

Although the Chairperson will appoint members, an appointed representative may designate an alternate with full voting rights whenever necessary.
(Added 1993.)

2.3. NTEP Advisory Committee

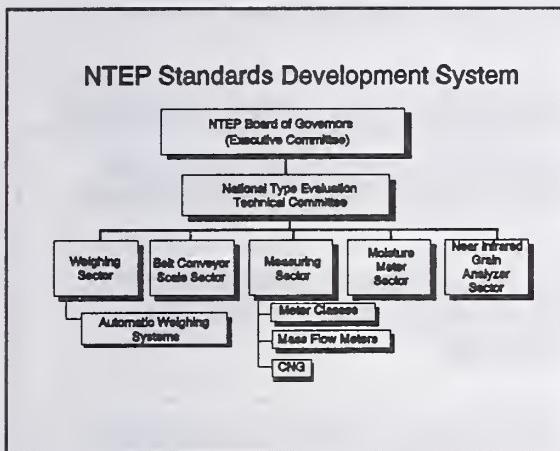
The NTEP Advisory Committee is composed of that part of the National Type Evaluation Technical Committee who are the Associate Members of the NCWM appointed by the NCWM Chairman to advise the Board of Governors and represent the interests of industry. (See Bylaws, Article V, § 5.)

The Organization Chart for the Administration of the National Type Evaluation Program is shown in Figure 1.

4. The National Institute of Standards and Technology

The NIST Office of Weights and Measures (OWM) provides:

- a. technical and administrative support to the National Type Evaluation Program (see NIST SP 250); and
- b. the Secretariat for the National Conference on Weights and Measures (see NIST SP 250).



In these roles, the OWM:

- a. administers the Program, including the receipt, recording, and review of requests for evaluation;
- b. assigns responsibility for evaluation to a Participating Laboratory and maintains records of the progress of evaluations;
- c. evaluates the qualifications of potential Participating Laboratories and issues Certificate of Authorization to those that comply (see NIST Handbook 143, Part II for criteria);
- d. functions as a Participating Laboratory;
- e. reviews Reports of Test Certificates of Conformance prepared by Participating Laboratories, makes decisions regarding compliance of the tested types with NIST Handbooks, and issues Certificates of Conformance; and
- f. maintains records of Certificates of Conformance and Reports of Test that have been issued and updates the composite record annually publishes a new edition of NCWM Publication 5, "Index of Device Evaluations", annually.*

* Note: See Appendix B for more information.

C. Devices to Be Submitted for Type Evaluation

Only those devices used in trade or commercial applications are subject to weights and measures requirements. Non-commercial devices are not subject to type evaluation or approval, or weights and measures control. More equipment is subject to weights and measures enforcement than is subject to type evaluation; the additional equipment is controlled through routine field inspections. The scope of NTEP evaluations is typically limited to devices for which formal type evaluation criteria exist, to devices for which definitive criteria exist in Handbook 44 (e.g., mechanical scales), and to new technologies or device applications where the development of criteria is deemed necessary.

In general, type evaluations will be conducted on:

- all equipment that affects the measurement process or the validity of the transaction (e.g., electronic cash registers interfaced with scales and service station consoles interfaced with retail fuel dispensers);
- all equipment to the point of the first indicated or recorded representation of the final quantity on which the transaction will be based.

That is, the minimum amount of equipment that must undergo type evaluation are all parts of a device or system that perform the measurement and process the measurement signals up to the first indicated or recorded value of the final quantity on which a transaction is based.

Examples of equipment to be submitted for type evaluation or for approval are shown in Table 1. The list is not all-inclusive.

Table 1

Weighing Devices, Elements and Systems	Liquid-Measuring Devices, Elements, and Systems
Complete scales, such as jewelers' balances, computing scales, non-computing bench scales, floor scales, and belt-conveyor scales.	Complete liquid-measuring devices and systems, such as gasoline dispensers and mass flow meters.
Indicating elements (both mechanical and digital electronic) separate from the weighing/load-receiving element (i.e., automatic bulk-weighing system controllers).	Indicating elements separate from the measuring elements (i.e., meter registers for loading/rack metering systems).
Weighing/load-receiving elements separate from the indicating elements (i.e., vehicle scale weighing elements and hopper scales).	Measuring elements separate from the indicating elements (i.e., positive displacement meters, turbine meters).
Load cells (to determine performance over a temperature range, particularly if the complete scale cannot be tested in an environmental chamber).	Major elements of a measuring system such as pressure sensors/transducers, temperature sensors/transducers, automatic temperature compensators.
Data processing systems that perform metrological functions. (In Canada, certain metrological functions such as total price computations, ticket printing, do not require approval but are subject to field enforcement).	
Software that performs metrological functions. The software may run on personal computers and/or hardware that is specifically designed as a weighing or measuring device.	
Other types of weighing and measuring devices such as linear measuring devices and solid volume measuring devices are also subject to type evaluation or approval.	

C D. Type Evaluation Process

The type evaluation process follows a sequence of steps (further explained in Sections D and E and F):

1. Request for type evaluation (usually by the manufacturer) to NIST, or to the Legal Metrology Branch (LMB), Canada*.
2. Decision by NIST to accept (or reject) the request.
3. Assignment by NIST of Participating Laboratory, or to LMB Canada*.
4. Decision by NIST on extent of evaluation necessary.
5. Conduct of the type evaluation by the Participating Laboratory or by LMB Canada*.
6. Report of deficiencies, if any, by the Participating Laboratory (or by LMB Canada*) to the manufacturer, who must correct these deficiencies before the process can continue.

7. Decision on conformance or nonconformance by the Participating Laboratory (or by LMB Canada*); if non-conformance, the manufacturer must correct deficiencies before the process can continue.
8. Review of the type evaluation results by NIST.
9. Preparation of the type evaluation results by Certificate of Conformance by the Participating Laboratory or by NIST.
10. Issuance of the Certificate of Conformance by NIST.

*Note: See Appendix A for more information.

D E. Request for Type Evaluation

Examples of potential applicants for evaluation are:

1. the manufacturer, including assemblers of systems comprised of subsystems produced by various manufacturers; and

2. manufacturers' sales representatives.

To obtain a type evaluation, the applicant shall:

1. address a letter requesting an evaluation to:

National Type Evaluation Program
 c/o Executive Secretary
NTEP Administrator
 National Institute of Standards and Technology,
 Physics Bldg. 221, Room A357
 Gaithersburg, MD 20899

For certain devices, application can also be made to LMB Canada. See Appendix A for more information.

2. attach the appropriate Application Form (see Part II of this publication), describing the type (including drawings with dimensions and specifications of large capacity scales), its operating characteristics and instructions, intended application, model number, capacity, size, and shipping weight;
3. authorize the billing of all associated costs incurred by NIST Administration, NCWM distribution and NTEP maintenance of the Certificate, and the Participating Laboratory (or for certain devices*, LMB Canada) conducting the evaluation;
(Amended 1993.)
4. following acknowledgement of a request by OWM, ship the type, intact and ready for evaluation, to the assigned testing location. (If special installation arrangements are required, they must be made by the requestor prior to the time of evaluation.)

The physical and metrological characteristics of copies of a type submitted for evaluation under NTEP are expected to be representative of production devices.

A company that is marketing a device (e.g. scale, indicator, or load cell) from a manufacturer and relabeling it under its own name must submit a separate request for a Certificate of Conformance. The request must include a statement that, except for the change in proprietary markings, the device is not changed from the original type. The original manufacturer must send a letter to NTEP stating that:

1. the manufacturer is providing the device to the company;
2. the relabeling is authorized by them; and

3. the device provided to the company is identical to the original type for which the manufacturer has received a Certificate of Conformance and requirements.

If a company relabels equivalent devices (e.g. load cells) from multiple suppliers, the company must:

1. satisfy the requirements above for each manufacturer; and
2. assign a unique model designation to each type from each manufacturer. The same model series may be used, but unique prefixes or suffixes must be used.

E E. Steps in the Type Evaluation Process

The type evaluation process is the first step of regulatory involvement in the legal metrology control system.

1. Conditions for Evaluation

- a. Test criteria and procedures are contained in Part II of this publication.
- b. Facilities are available to conduct the evaluation. (See options available to ~~Participating Laboratories~~, in paragraph 4 below.)

2. Initiation of Evaluation Process

One or more copies of the type will be submitted with a request for device evaluation. Engineering specifications and operating descriptions that characterize the type must be submitted.

3. Choice of ~~Participating Laboratories~~

The manufacturer may request that a particular ~~Participating Laboratory~~ conduct the evaluation, probably based on location. Cooperation between manufacturer and NTEP is considered to be advantageous.

NTEP will try to honor the request, but NTEP has the final authority to assign the ~~Participating Laboratory~~. If another ~~Participating Laboratory~~ could conduct the evaluation sooner, the manufacturer will usually be given an opportunity to withdraw the request. Under the U.S./Canada Mutual Recognition Agreement, certain devices may be directed to LMB Canada in order to ensure a sufficient and diversified workload in Canada to maintain the viability of its laboratory and competence of its technologists.

4. Participating Laboratories - Options

The type evaluation process will normally be conducted in Participating Laboratories.

a. Minimizing Program Cost

NTEP policy is to minimize the cost of the Program to all parties. In some circumstances, testing in U.S. laboratories other than Participating Laboratories might be warranted, but only if supervised by representative(s) of a Participating Laboratory. Participating Laboratories may consider augmenting their own capabilities by using:

- a. manufacturers;
- b. independent testing organizations; or
- c. Federal or state government agencies.; or
- d. U.S./Canada Mutual Recognition of Type Evaluation Program if applicable;

b. Considerations

NTEP will consider the following before proceeding with full evaluation:

- (1) Is the amount and credibility of the test data provided by the manufacturer as evidence of conformity of the type to NIST Handbooks equivalent to that which would be produced by a Participating Laboratory?
- (2) Does the type apply new technology with which NTEP has not dealt before, and/or does a Participating Laboratory have the facilities or knowledge necessary to carry out the required evaluations?
- (3) In the absence of adequate test facilities in a Participating Laboratory, are suitable manufacturer or third-party test facilities available?
- (4) Must the testing be done in situ because the type is not portable and must be assembled at a user site? Different aspects of a given evaluation may be carried out at different sites for convenience, such as at the factory, in a laboratory, and at a user location.

5. Safeguarding Proprietary Information

In the course of the process, the NTEP (and Participating Laboratories) often become privy to proprietary information related to the device, manufacturing

techniques, etc. These agencies are bound to protect this information and must limit access to it, or to data developed during the NTEP process, to properly authorized organizations or individuals, e.g., only the applicant and the manufacturer.

F G. Full or Provisional Certificate of Conformance

The NTEP will normally conduct a complete evaluation which will result in the issuance of a Full Certificate of Conformance if the type meets the requirements. Under certain circumstances, the NTEP will issue a Provisional Certificate of Conformance.

1. Full Certificate of Conformance

a. Conditions

Under some conditions, the scope of an evaluation may justifiably be limited but still result in the issuance of a Full Certificate of Conformance.

These conditions include:

- (1) restricted application of the type,
- (2) special requirements concerning installation, safeguarding, maintenance, and/or recalibration. These conditions may be inclusive or exclusive, as in "...for use in measuring the volume of water only..." or "...not for use in measuring corrosive liquids..."

b. Permanence Test

In those cases where a permanence field test is required under NTEP, it is a part of the full type evaluation.

2. Provisional Certificate of Conformance

A Provisional Certificate of Conformance may infrequently be issued under some circumstances without a full evaluation, but only after authorization by the Board of Governors.

In accepting a Provisional Certificate of Conformance, the manufacturer shall agree in writing that:

- a. further evaluation will take place before a Full Certificate of Conformance can be issued; and
- b. existing copies of the type will be modified or retrofitted if required.

As an example, a Provisional Certificate of Conformance may be issued after partial or limited evaluation if there is an urgent need for use of the type and the NTEP is temporarily unable to carry out a complete evaluation. (See also Section H.)

G H. Variations in Type Evaluation

Variations in the type evaluation process may result from consideration of the history of the type.

1. Initial Evaluation

An Initial Evaluation is conducted on a type not previously submitted to the NTEP. In most cases, the Initial Evaluation will entail full testing of the type. However, some tests may be waived based on previous experience with the manufacturer and/or with similar types.

2. Reevaluation

NTEP may decide to reevaluate a previously evaluated type, whether or not a Certificate of Conformance has been issued. Reevaluation must be justified based on considerations such as the following:

- a. Devices manufactured after the effective date of any new nonretroactive regulations must meet the new requirements; devices manufactured prior to the effective date of such regulations must meet retroactive requirements only.

- b. The devices in use fail to meet requirements.

Reevaluation may result in reconfirmation, amendment to, or withdrawal of the Certificate of Conformance.

3. Expansion of the Certificate of Conformance

A type with a valid Certificate of Conformance may be reevaluated in order to encompass additional features, such as the range of the measured quantity or the kinds of commodities that may be measured.

In most such cases, it will be sufficient to determine the validity of the added features: the evaluation(s) will not go through the entire checklist, but will test the new features through their range(s) of performance.

4. Evaluation of a Type Previously Approved by Pre-NTEP Jurisdiction

A type already approved in one or more jurisdictions may be submitted for evaluation under NTEP.

Discussions with the approving jurisdiction(s) may lead to the conclusion that the type meets all requirements of NTEP, in which case a Certificate of Conformance may be issued without formal testing.

The NTEP may accept data obtained in, or conclusions drawn from, prior evaluation.

The NTEP may conclude that limited evaluation will suffice to check for differences in the requirements of the testing jurisdiction and NTEP.

Prior to an NTEP evaluation, OWM will examine the report of the previous evaluation and the regulations under which the prior evaluation was made and will determine the extent to which the results can be accepted. The decision may be based in part on the similarity of requirements in the two cases and on the policies and reputation for competence of the pre-NTEP jurisdiction.

5. Recognition of Pre-NTEP Approved Devices

- a. Pre-NTEP ~~Provisional~~ Certificates of Conformance will be issued to those devices that: (a) are not affected by the influence factors; (b) satisfy the NTEP requirements; and (c) are based upon the evaluation by another jurisdiction.
- b. Manufacturers of these devices must request that a Certificate of Conformance be issued and provide copies of the certificates of approval.
- c. If NTEP determines that adequate testing was performed and the device has not been modified from the original device design, then a Pre-NTEP certificate will be issued.
- d. The ~~provisional~~ ~~Pre-NTEP~~ certificates will be distributed to the States. State Directors will be asked to report (within 90 days of receipt) if their experience indicates that the devices do not comply with Handbook 44. Any objections will be reviewed by the Board.
- e. If there are no unfavorable responses, a full Certificate of Conformance will be issued for the device within 120 days from the date the ~~provisional~~ ~~Pre-NTEP~~ certificate was distributed to the States.
- 6. Evaluation of a type in use but not previously approved

Many types in use have never undergone type evaluation, neither at the NIST nor by a state. A manufacturer may

choose to request evaluation under NTEP or, if the device is to be installed in a particular jurisdiction, that jurisdiction may require that the type be evaluated.

Some devices may not meet the requirements of the NTEP; however, it is assumed that all types in use meet the requirements of Handbook 44 since they have undergone testing in the state(s) in which they are installed. The NTEP has no authority to change the status quo in these instances. However, for the continued sales of these types, they must be evaluated and a Certificate of Conformance issued.

H I. Evaluation of New Technology

Type evaluation must deal with innovation and the application of new technology. It is anticipated that the NTEP will encounter features for which test criteria or procedures have not yet been developed.

In such cases:

1. the necessary criteria and/or procedures will be developed, ad hoc, by the NIST and participating laboratory representatives as expeditiously as possible;
2. these criteria and/or procedures will be submitted to the appropriate sector of the National Type Evaluation Technical Committee, NTEP Technical Subcommittee, either by letter ballot, regularly scheduled meeting, or at a specially called meeting, depending on the complexity or sensitivity of the material; and
3. material accepted by the Technical Committee will be introduced into the normal NCWM process.
4. Pending completion of the normal NCWM administrative process, the NTEP will issue a Provisional Certificate of Conformance, provided the device meets the requirements of the proposed criteria and/or test procedures.

NCWM administrative process normally follows the steps described below:

1. If no changes are required to NIST Handbook 44, proposed criteria and/or procedures will be submitted through the Executive Committee (Board of Governors), to the NCWM membership in sequence. Adopted test criteria and procedures will be made a part of NCWM Publication 14.

2. Any changes required in NIST Handbook 44 will be submitted to the S&T Committee, the Executive Committee (Board of Governors), and the NCWM membership in sequence. Adopted changes will be made a part of NIST Handbook 44. Test criteria and procedures will be made a part of NCWM Publication 14.

A new feature or technology incorporated in the type being evaluated may not meet current NTEP requirements, but nonetheless be appropriate for its intended commercial use. The NTEP may then WAIVE or ALTER current practice and issue a Provisional Certificate of Conformance pending adoption of the change(s) by the NCWM process.

If there is NTEP consensus on the recommended criteria and procedures, AND the type meets the new requirements, the follow-up process will be administrative. If no consensus can be reached on the criteria or procedures, but the type meets the requirements as proposed by the NIST and Participating Laboratories, a Provisional Certificate of Conformance will be issued. If more demanding criteria or procedures are subsequently proposed and adopted, the type will be tested under those criteria or procedures.

J. "One of a Kind" Devices

If a device manufactured for sale by a company has been categorized and tested as a "one-of-a-kind" device and the manufacturer then decides to manufacture an additional device or devices, the device will no longer be considered a "one-of-a-kind." This also applies to a device that has been determined to be a "one-of-a-kind" device by a weights and measures jurisdiction in one state and the manufacturer decides to manufacture and install the device in another state. In this case, the manufacturer of the device must request an NTEP evaluation on the device through the normal application process, unless NTEP has already deemed that such evaluation will not be conducted. Note that indicators and load cells in all "one-of-a-kind" installations must have an NTEP CC.

(Added 1993)

I K. What Constitutes a "Different" Type?

With two similar types from a single manufacturer, a decision must be made whether to conduct one or two separate evaluation processes. The following guidelines should be followed:

1. Superficial Differences Between Devices

Types that are identical in design, materials and components used, and measurement ranges, but that differ superficially in their enclosures, detailed size, color, or location of non-metrological appointments (function lights, display location, operational key locations, etc.) will usually be submitted to a single evaluation.

2. Component Variations

Types produced by the same manufacturer with nominally identical components or materials procured from different suppliers can usually be regarded as the same type. They will be covered by a single evaluation if the different components or materials are not likely to affect the regulated metrological characteristics, reliability, or life of the types.

If changes in components or materials are likely to affect the performance or operational characteristics of a device, separate evaluations will generally be required. A type is considered MODIFIED if a change alters a metrological or technical characteristic.

J L. Considerations Preceding Evaluation

Certain considerations that precede the type evaluation process itself are discussed in the following paragraphs.

1. Reasons For Initiating Process

Reasons for initiating evaluation are listed below:

- a. new type;
- b. existing type not previously evaluated for legal use or not evaluated by NTEP;
- c. new application of an evaluated type;
- d. modification of an approved type; or
- e. previous rejection or withdrawal of Certificate of Conformance coupled with newly-presented facts concerning the type, improvements to the type, or a change in regulations.

2. Responsibility for Reporting Occurrence of Modifications

When a manufacturer makes changes to an approved type, evaluation of the modification may be necessary.

The manufacturer must report changes that might require the attention of the NTEP; the decision to report is dictated by the significance of the modification.

a. Notification of Change.

The manufacturer notifies the NTEP that a change to an approved device has been made or is contemplated. The manufacturer may make judgments concerning the modification and request issuance of an approval of a modification by citing the existing Certificate of Conformance, detailing the changes, and giving any data, analysis, and conclusions concerning the technical or metrological consequences of the changes.

b. NTEP Options

On the basis of the manufacturer's notification, the NTEP will decide whether or not to require an evaluation for approving the modification or issuance of a new Certificate of Conformance. NTEP will inform the manufacturer accordingly.

c. Marking

Any device modified to meet the influence factors requirements must carry a model designation different from the previous model. The differentiation may simply be a prefix or suffix to the original model designation. The device may still carry the same model series designation on the device, but the model designation on the identification badge must be unique.

K M. Period of Validity Status of Certificate of Conformance; Maintenance

Fee

A Certificate of Conformance does not have an expiration date; however, the device manufacturer must update the design of a device to meet new or modified requirements adopted by the NCWM. The NCWM charges a maintenance fee for active Certificates to support the technical and administrative activities of the NCWM for the NTEP.

1. Declaration of Status by Certificate Holder. The Certificate holder, usually the manufacturer or remanufacturer, declares intent to continue to manufacture or remanufacture the device by paying an annual maintenance fee for the Certificate. If the maintenance fee is not paid (or if other outstanding bills have not been paid or arranged to be paid for the issuance of a Certificate), the Certificate is "inactive."

2. Active Status. Devices are being manufactured or remanufactured for commercial applications under an NTEP Certificate of Conformance.
3. Inactive Status. Devices are no longer being manufactured or remanufactured for commercial applications. However, devices already manufactured, installed or in inventory, but not yet sold, may be used, sold, repaired, and resold, under an Inactive Certificate of Conformance.
4. Withdrawn Status. The Certificate of Conformance remains valid unless withdrawn as the result of a specific determination by NTEP. (See paragraphs 1 and 2, below.)

(Amended 1993)

~~Withdrawal of Certificate of Conformance.~~ Approval A Certificate of Conformance may be withdrawn

- a. for deficiencies in the type, or
- b. when production on devices do not meet type, but only as an action of last resort.

(Amended 1993)

5. Feedback. The evaluation process under NTEP can generate only limited data. The data gathered during the initial and subsequent verifications of a larger number of devices of a given type will, when systematically analyzed, often yield information not available from the type evaluation. Such feedback can be used as the basis for revising the conditions of approval when the situation so warrants.

Depending on circumstances, experience gained during verifications may justify later changes in the Certificate of Conformance; in extreme cases, it may dictate reevaluation of the type.

L N . Results of Evaluation

The results of evaluation include both a report of objective findings and a report of conclusions and recommendations concerning approval. These may be given in a single document or in two separate documents, as indicated below. Separate documents are especially appropriate when evaluation and a Certificate of Conformance are the responsibilities of different officials (for example, when testing of the type is carried out in a state laboratory and a Certificate of Conformance is issued by NIST). These reports will be retained permanently by the NCWM.

1. Report of Objective Findings

The report will be a permanent, objective record of the evaluation process and its results, against which future evaluations can be compared. It will identify the type, components and salient documents examined, personnel and laboratories that carried out the evaluation, and any special procedures, standards, and equipment used in the process. It will contain important data, ambient conditions, and the time data were taken, or identify the repositories of such data and the values of measured metrological characteristics and the associated uncertainties.

The report will include all characteristics subject to requirements in regulations and those that form the basis for defining the type. To the extent that findings are based not on measurement, but on visual inspection, they will be in each instance as objective as possible.

2. Report of Conclusions and Recommendations Resulting from Evaluation

The report giving conclusions and recommendations will be based on the findings of the Participating Laboratory and will provide the basis for a decision by NIST regarding issuance of a Certificate of Conformance. The recommendation may include the following:

- a. Certificate of Conformance,
- b. Provisional Certificate of Conformance,
- c. unqualified rejection giving the main reasons for rejection,
- d. qualified rejection (recommendation that the type be rejected, but that it be subsequently approved if specified modifications are made to the satisfaction of the Participating Laboratory, as may be demonstrated by a partial reevaluation), or
- e. recommendation that the type be rejected, that the applicant be adequately informed about its deficiencies, and that the type be accepted for a complete reevaluation in the future, provided the applicant declares that the deficiencies have been corrected.

3. Deficient Evaluation

If a significant area of non-compliance was overlooked by a Participating Laboratory in evaluating a type, costs of re-evaluation will be borne by the Participating Laboratory. In such cases, every effort will be made to

provide the manufacturer with adequate time to meet the requirements, including time to modify and/or retrofit the devices in use.

If a type for which a Certificate of Conformance was issued is found in use to have a feature that was not operational or not present during the evaluation, costs of re-evaluation will be borne by the manufacturer. If the manufacturer requests a re-evaluation with the new feature, and the type is approved, an amendment to the Certificate of Conformance will be issued. If the type does not meet approval as a result of the new feature, the Certificate of Conformance will be withdrawn.

M O. Certificate of Conformance

The Certificate of Conformance (see next page) includes the following kinds of information:

1. Application of the Type

- a. approved ranges
- b. maximum capacity
- c. reference conditions
- d. normal conditions of use
- e. approved subjects of measurement: physical quantities, commodities, materials, objects, or phenomena that may be measured
- f. special restrictions on application

2. Accuracy

- a. accuracy class
- b. nominal error(s); maximum permissible error(s)
- c. required use of calibration charts, corrections, or instrument constants

3. Required of Manufacturer

Required name plate information, stamps, marks, and seals affixed at the factory

4. Requirements for Use

- a. installation requirements
- b. legally required auxiliary equipment and corresponding minimum characteristics

- c. for approved auxiliary equipment, identification of the measuring instruments in conjunction with which it may be legally used

- d. operating instructions

5. Summary of Findings

The summary lists the characteristics, attributes, and conditions of the type that are subject to regulation.

6. Post-Evaluation Responsibility of Manufacturer

As a result of requesting an evaluation and accepting the Certificate of Conformance, the manufacturer implicitly asserts that all devices manufactured as the type referenced in the Certificate of Conformance are the same type. If a production device is found with a model number corresponding to that referenced in the Certificate of Conformance but which does not conform to the type, the Certificate of Conformance may be withdrawn.

Questions regarding the conformance of manufactured devices to the type for which a Certificate of Conformance was issued will be addressed using the existing verification system based on the following premises:

- a. existing NTEP policies are sufficient to address production devices;
- b. NTEP is limited to the initial type evaluation of devices but is intended to work with existing enforcement programs to provide feedback and validation of type (a Certificate may be withdrawn because production is not equivalent to the type) (see Part M.S. Feedback);
- c. the field enforcement process and verification of production using NTEP administrative resources is responsible for ensuring that production devices comply with Handbook 44 (this may include obtaining production devices or components and subsequent evaluation of these devices or components); and
- d. if (i) the field verification process reveals a history of abnormally high device failure; or (ii) the field verification process reveals that production devices do not match the type for which the Certificate was issued; or (iii) subsequent laboratory evaluation of the device or component reveals that it does not comply with the influence factors requirements specified in Handbook 44, this information may be

used in withdrawing a Certificate of Conformance for cause.

(Amended 1993)

N P. Report of Deficiencies

A report of deficiencies will include the following information:

1. applicant, manufacturer, and type for which application was made;
2. applicable regulations;
3. specific components and salient documents examined;
4. characteristics and their parametric values found to be deficient, and the corresponding acceptable values; and
5. other unfulfilled conditions (when there are many reasons for rejection, only the major reasons will be given).

If non-conformance is based on relatively minor deficiencies or deficiencies that can be easily corrected, the report may list changes to make the type acceptable.

Q. Appeal Process

At any stage in the evaluation process, especially after a decision NOT to issue a Certificate of Conformance or to WITHDRAW a previously-issued Certificate of Conformance, a manufacturer may appeal to the NTEP Board of Governors. A state or other party may also appeal a decision of the NTEP, including the issuance of a Certificate of Conformance.

Upon request, the NTEP Board of Governors will review the case and issue a decision, which may result in withdrawal of a Certificate of Conformance. For its evaluation, the Board may request the advice of the Advisory Committee.

The following procedures will be followed when filing an appeal:

1. When an appeal is lodged, a copy of the letter requesting the appeal will be sent to all members of the Board of Governors, to the NTEP management at NIST, and to the Participating Laboratory or other appropriate party upon whose action or inaction the appeal is lodged, or with whom the dispute concerns.

2. The party upon whose action or inaction the appeal is lodged will be given the opportunity to provide written comments concerning the appeal. Copies of the written comments will be made available to the Board of Governors and to the party lodging the appeal.
3. In order to preserve objectivity on the part of the Board of Governors, no oral arguments or oral comments or discussions will be heard by any member or members of the Board of Governors unless or until a hearing is held to decide the appeal.
4. The Chairman may ask for assistance or testimony from a third party (for example, from a Participating Laboratory.)
5. The Chairman will notify both parties to an appeal orally immediately following a decision, and follow up with written notification.
7. The reports of the S&T Committee will be considered as rationale for the standards, similar to legislative history as a tool to understand the intent of the Committee and Conference.

(Added 1992)

The NIST serves as a second level of review in its role as the issuer of NTEP Certificates of Conformance. If the NIST confirms the recommendation of the NTEP, the applicant may appeal to the Federal Trade Commission through the established Federal Government process.

R. Distribution of Outputs of Evaluation

A Certificate of Conformance, a report of deficiencies, an amendment to an existing certificate, or a similar document reflecting the approval decision will always be sent to the applicant at the earliest possible time. NTEP will send to the applicant copies of, or excerpts from, the reports of evaluation and of conclusions and recommendations.

The Certificate of Conformance will be sent to all the states and major jurisdictions. NCWM Publication #5 will be updated annually to incorporate all Certificates of Conformance issued during the previous calendar year.

The Publication* includes the information listed below.

1. Number assigned to each Certificate of Conformance
2. Date that Certificate of Conformance was issued
3. Company name

4. Model designation
5. Device type
6. Capacity, flow rate, or size
7. Copy of the Certificate

*Note: See Appendix B for more information.

Q S. References to NTEP

The effectiveness of the NTEP system will depend on widespread awareness of its utility. Manufacturers and state authorities are encouraged to publicize the system subject to the guidelines below.

1. Restriction

Recipients must avoid any implication that the Certificate of Conformance carries with it an endorsement or approval of the product by the National Institute of Standards and Technology.

Issuance of a Certificate of Conformance by the National Institute of Standards and Technology only constitutes evidence of the conformance of a type with the requirements of this publication and NIST Handbooks 44, 105-1, 105-2, and 105-3. (See Paragraph A.5 of this document.)

2. Permissible Use of Statements and NTEP Logo

a. The Manufacturer

The manufacturer may communicate to clients and the public the fact that a Certificate of Conformance was issued for a type. State officials will automatically receive copies of all Certificates of Conformance issued and need not be advised of this fact by the manufacturer.

(1) Statement

The following statement may be used in company correspondence, brochures, and professional, technical, and trade publications;

Certificate of Conformance (insert Certificate number) was issued under the National Type Evaluation Program of the National Conference on Weights and Measures.

(2) Logo

The NTEP logo may be:

- (a) used in conjunction with the above statement and in advertising materials for the device for which the Certificate of Conformance was issued; and
- (b) affixed to any device manufactured to be the same as the NTEP-approved device. However, sale and use of individual manufactured devices are subject to acceptance testing by state and local jurisdictions.

b. The States

States participating in the NTEP (that is, permitting the sale of devices in their states based on the NTEP Certificate of Conformance) and/or states operating NTEP Participating Laboratories are encouraged to communicate their activities to potential clients and the public. NTEP authorization means that a laboratory is competent to perform standard tests of specific weighing or measuring devices.

A statement about a state's participation and/or authorization and the NTEP logo may be used in correspondence, brochures, and test reports and data sheets (provided the tests or services are performed in accordance with the terms of its authorization).

(1) Statement

A state whose laboratory has been authorized may use the following statement:

Authorized by the National Institute of Standards and Technology under the National Type Evaluation Program (NTEP) for testing --(identify device types covered by the Authorization Certificate).

A state accepting Certificates of Conformance may use the following statement:

(Name of State) -- permits the sale of weighing or measuring devices for use based on the issuance of the NTEP Certificate of Conformance.

(2) Logo

The NTEP Logo (see below) may be used in conjunction with the above statements or alone in materials dealing with the NTEP.

c. Questions About Use of Statements or Logo

Any questions regarding the use of the statements or logo not specifically covered above, or any questions concerning the propriety or acceptability of their use in a

Executive Committee

particular situation, should be brought to the attention of the NTEP Board of Governors through the NCWM Executive Secretary.

d. The NTEP Logo

Glossy black and white positives and pressure sensitive NTEP color Logos are available from the NCWM office. For further information please contact:

National Conference on Weights and Measures
Conference Coordinator
P.O. Box 4025
Gaithersburg, MD 20885



U.S. Department of Commerce
National Institute of Standards and Technology
Gaithersburg, MD 20899

Certificate Number:
Page

National Type Evaluation Program
Certificate of Conformance
for Weighing and Measuring Devices

For:

Type of Device
Description
Model:
 n_{max} :
Capacity:
Platform:
Section cap. & # sect>

Accuracy Class:

Submitted by:

name
street address
street address
city, state, zip
Tel: tele number
Fax: fax number
Contact: contact name

Standard Features and Options

Standard Features & Options

Temperature Range: -10 °C to 40 °C (14 °F to 104 °F)

This device was evaluated under the National Type Evaluation Program (NTEP) and was found to comply with the applicable technical requirements of Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages.

Effective Date:

Chief, Office of Weights and Measures
Issue Date:

Note: The National Institute of Standards and Technology does not "approve", "recommend", or "endorse" any proprietary product or material, either as a single item or as a class or group. Results shall not be used in advertising or sales promotion to indicate explicit or implicit endorsement of the product or material by the Institute. (See NTEP Policy and Procedures).

Appendix A

U.S./Canada Mutual Recognition Agreement on Type Evaluation

1. Purpose

The purpose of this Mutual Recognition Agreement (MRA) is to set out a working relationship to implement applicable provisions of the Free Trade Agreement (FTA) by providing for the mutual recognition of the device evaluations administered and performed by the Legal Metrology Branch (LMB) of Industry and Science Canada and by the National Type Evaluation Program (NTEP) of the National Conference on Weights and Measures (NCWM) of the United States.

2. Background

The Government of the United States of America and the Government of Canada are parties to the FTA. Chapter Six of the FTA applies to technical standards, and Article 604 of this agreement provides in part 1 that:

To the greatest extent possible, and taking into account international standardization activities, each party shall make compatible its standards related measures and procedures for product approval with those of the other party.

The LMB and NTEP operate ongoing type evaluation systems for commercial measuring devices. Canada, many States and several U.S. Federal agencies require the evaluation and approval of the design and performance of device prototypes prior to their sale for commercial use.

Rather than submitting commercial devices for the United States market to NTEP laboratories and essentially the same devices for the Canadian market to LMB's laboratory, manufacturers requested that the United States and Canada (1) combine their evaluation tests and (2) recognize either NTEP laboratory or LMB laboratory results of the combined evaluation as the basis upon which NTEP and LMB would each issue their evaluation documents (either the NTEP Certificate of Conformance or the Canadian Notice of Approval). Expected benefits include: increased uniformity of test methods reducing unnecessary differences, misunderstandings, and unnecessary duplications; reduced costs and improved turn-around time by accessing a single source for type evaluation for both nations; increased competitiveness for both U.S. and Canadian manufacturers by speeding the time from design to the end markets.

The following policy was adopted in January 1993 by the National Conference on Weights and Measures, in concert with the Legal Metrology Branch, Canada:

With respect to weights and measures devices, the parties agree that the most effective means to remove barriers to free trade is to achieve mutual recognition of device type evaluation testing. This will necessarily involve the comparative analysis of type evaluation codes and test procedures together with the intent of streamlining and minimizing differences in so far as possible so as to enable efficient device evaluation while preserving the technical capability and competence of their mutual laboratories.

3. Agreement

The United States National Type Evaluation Program (NTEP) and Canada's Legal Metrology Branch (LMB) agree to recognize each other's type evaluation results:

- NTEP will recognize the results of the tests performed by the LMB for the purpose of issuing NTEP Certificates of Conformance for the device types set out in the annex to this agreement.

- LMB will recognize the results of the tests conducted by the NTEP Participating Laboratories for the purpose of issuing a Canadian Notice of Approval for the device types set out in the annex to this agreement.

Each party will continue to issue its own document (either the NTEP Certificate of Conformance or the Canadian Notice of Approval).

Each party will

- make all information available to the other party, maintaining confidentiality of proprietary information;

- collaborate in the development of additional areas of mutual recognition;

- collaborate in the development of requirements and test methods for commercial devices and systems;

- collaborate in the development and maintenance of proficiency and uniformity of evaluation; and

- collaborate to preserve the technical capability and competence of their mutual laboratories.

4. Collaboration

Both parties will collaborate to eliminate or minimize differences in requirements and test methods so as to enable efficient device evaluation.

5. Resolution of Complaints

This MRA does not create obligations binding under international law. However, each party will investigate complaints that the other party brings forward, and both parties will work together to seek satisfactory resolution of such complaints.

6. Duration and Termination

This agreement will become effective on April 1, 1994. It will remain in effect for a period of five (5) years and may be extended by mutual consent. This MRA may be terminated at any time by either party upon six (6) months written notice to the other party.

7. Application for Type Approval

Under this agreement, any applicant for type approval is free to apply to either country when requesting type approval in either Canada, the United States or both countries.

Mutual Recognition Agreement

ANNEX

List of device types that are subject to provisions of the Mutual Recognition Agreement.

1. Electronic non-computing bench and platform scales or separate weighing elements with a capacity up to and including 500 kilograms.
2. Electronic indicators for use with weigh scales.
(Added 1994)

Appendix B. Authorized Areas and Other Services

1. Authorized Areas of Evaluation by U.S. Participating Laboratories

See the figure on the next page.

1. Publication 5

In addition to the annual edition of Publication 5, two supplements are issued annually. Contact the Office of Weights and Measures concerning its availability in hard copy. Monthly updates of the index only are also available through the Electronic Bulletin Board (301) 869-1665. For further information on how to access the bulletin board, please call (301) 975-4004.

3. Administrative Fees

An administrative fee of \$300 (if a participating lab drafts the certificate other than NIST) or \$550 (if NIST drafts the certificate) is charged for management, certificate preparation, duplication, and distribution of the NTEP Certificates of Conformance. This charge is in addition to NTEP evaluation labor and expenses and the yearly maintenance fee, and is billed separately. Laboratory costs are provided below:

4. NTEP Logo Seals

Pressure sensitive NTEP Logo seals are 1 1/4" in diameter and available at \$100.00 per roll of 250. To order contact NCWM Conference Coordinator, Box 4025, Gaithersburg, MD 20885.

NTEP Participating Laboratories Current Labor Charges Per Hour*

Alabama	\$45/hr**
California	\$73/hr
Legal Metrology Canada	\$60/hr (Canadian)
Force Group	\$4,000 for 1 cell; \$2,000 for 2nd identical cell submitted at the same time
FGIS	\$41.90/hr Railroad Scales: \$44.00 plus expenses
Maryland	\$45/hr
Nebraska	\$70/hr
New York	\$75/hr
NIST	\$70/hr
North Carolina	\$45/hr
Ohio	\$70/hr
Oregon	\$60/hr

* The charges listed below are subject to change.

** The hourly labor charges do not include travel expenses if applicable.

Authorized Areas of Evaluation By U.S. Participating Laboratories

December 1, 1994

AL=Alabama
OR=Oregon
CA=California

NI=NIST
PGIS=Federal Grain Inspection Service
MD=Maryland
OH=Ohio

NY=New York
FG=Force Group
NE=Nebraska
NC=NC Carolina
KG= FGIS at Kansas City

Action Description	A L	C A	P Q	FG IS	NI ST	M D	N C	N E	N Y	O H	O R	K C
Type Evaluate All General Purpose Scales ¹		X			X	X				X	X	
Type Evaluate All Measuring Devices ¹		X			X	X				X	X	
Type Evaluate Indicators/ECR's with Scales ¹		X			X	X				X	X	
Type Evaluate Indicators/ECR's with Measuring Devices ¹	X				X	X						
Type Evaluate Automatic Bulk Weighing Systems ¹	X		X							X	X	
Type Evaluate Belt Conveyor Scales ¹	X		X							X	X	
Type Evaluate Tachometers	X		X							X	X	
Test Load Cells (inc. Influence Factors)		X								X	X	
Perform Influence Factor Testing		X								X	X	
Field/Penn Test Medium Capacity Scales		X								X	X	
Field/Penn Test Large Capacity Scales	X	X								X	X	
Field/Penn Test Railroad Track Scales		X								X	X	
Field/Penn Test Hopper Scales		X								X	X	
Field/Penn Test Belt Conveyor Scales	X	X								X	X	
Field/Penn Test All Measuring Devices		X								X	X	
Field/Penn Test Indicators with Measuring Devices			X							X	X	
Add models to Certificates of Conformance			X							X	X	
Cross Reference Products Between Certificates of Conformance			X							X	X	
Type Evaluate Grain Moisture Meters			X							X	X	
												X

¹ Type evaluate and generate Certificates of Conformance but may include field performance testing by other authorized laboratories.

Appendix E. NTEP Participating Laboratories Report

Participating Laboratories Evaluation

July 1, 1995

All Labs	1992	1993	1994	01/01/95 - 06/30/95		
				Total	TEs	Up-dates
Requests Assigned ¹	296	313	364	181	138	43
US Mutual Recognition Requests Assigned			21		19	
Certificates Effective ²	83	35	68	74	63	11
Certificates Issued	297	237	164	76	48	28
Average Time (wks) to Perform Activities for Successful Type Evaluations						
			TEs: (CCs Issued 1994)		TEs: (CCs Issued 1 - 6/95)	Updates: (CCs Issued 1 - 6/95)
"Date Assigned" to "Equipment Received"			6		6	
"Equipment Received" to "Type Evaluation Complete"			4		11	
"Type Evaluation Complete" to "CC Effective"			4		4	
"CC Effective" to "Draft Certificate To NIST"			4		11	
"Draft Certificate To NIST" to "Certificate Issued"			9		4	4
"Date Assigned" to "Certificate Issued"	24	28	23	25	31	14

Activity	CA	MD	NY	OH	NIST	OTHER	TOTAL
Number of Requests Assigned ¹							
1992	49	22	15	69	141	--	296
1993	65	24	21	60	134	--	304
1994	103	39	32	73	93	24	364
1995 (1/1/95 - 6/30/95)	31	24	17	29	67	13	181
Number of Certificates Effective ²							
1992	7	3	3	11	59	--	83
1993	8	5	4	4	14	--	35
1994	14	4	2	23	22	3	68
1995 (as of 6/30/95)	17	3	6	19	25	8	78
Number of Certificates Issued							
1992	79	16	18	84	100	--	297
1993	42	11	15	38	131	--	237
1994	42	9	19	21	71	2	164
1995 (as of 6/30/95)	20	4	3	9	39	4	79

¹ Beginning in 1994, if a device fails a type evaluation, it is then entered as a new request for a new type evaluation. Previous to 1994, multiple failures of the same device were still considered as a single type evaluation.

² "Effective" means the type evaluation is complete but the certificate has not yet been issued.

Appendix F. Report on OIML Activities

Prepared By
Samuel E. Chappell, Chief
Standards Management Program, NIST

International Committee of Legal Metrology (CIML)

The CIML establishes the policy and approves the technical plans and work of the various OIML Technical Committees. Its 29th meeting was in Paris, France, from October 12-14, 1994. Representatives for 45 of the 53 member nations attended. The following significant reports and decisions were made at the meeting:

Reports presented:

- o Status of technical Committees (TCs) and Subcommittees (SCs). Responsible member nations (Secretariats) were requested to review the status of projects assigned. Member nations were urged to participate in the committees and to review their collaboration in the work as either a participating (voting) member or as an observing (non-voting) member.
- o OIML Certificate System
 - More than 40 OIML Certificates have been issued mainly for R76 "Nonautomatic Weighing Instruments" and a few for R60 "Load Cells."
 - Several other instruments are eligible to be included under the Certificate System which requires that the OIML Recommendation for the instrument include at least (a) metrological and technical requirements, (b) a test procedure, and (c) a test report format.
 - A report was presented by the International Bureau of Legal Metrology (BIML) on the results of a questionnaire sent to member nations concerning participation in, implementation of, and future acceptance of the Certificate System.
- o OIML Information
 - The new format of the OIML Bulletin has been well received.
 - A long term policy Document developed by the Presidential Council of CIML was approved and it is expected to be published in 1995. It comprises three parts: (a) Metrology, (b) OIML Today, and (c) Long Term Strategy.
 - A new brochure on OIML prepared, designed, and edited by BIML is expected to be published in 1995.
- o OIML Development Council
 - The Development Council met in Paris just before the CIML meeting. It established four task groups: (1) Training in Metrology, (2) Planning and Equipping Metrology Laboratories, (3) Documentation and Information, and (4) Organization of Metrology Services.

Decisions:

- o Recommendations. Nine new and five revised or amended Recommendations (14 total) were approved. Seven of these are of interest to the NCWM:
 - Pipe Provers for Testing Measuring Systems for Liquids
 - Characteristics of Standard Capacity Measures and Test Methods for Measuring Systems
 - Testing Procedures for Pattern Examination of Fuel Dispensers for Motor Vehicles
 - Measuring Assemblies for Liquids Other Than Water (Combining R5, R27, R57, R67, and R77)
 - Diaphragm Gas Meters (Revision of R31)
 - Nonautomatic Weighing Instruments (Amendment to R76)
 - Discontinuous Totalizing Automatic Weighing Instruments (Annex -test procedures- R107)

- OIML Certificate System. It was decided to establish a Technical Advisory Group (TAG) for the System in order to monitor, improve, and facilitate its development. BIML will be the Secretariat, and the United States will be a member among some 10 other OIML member nations.
- Leadership. G. Faber, CIML member for the Netherlands, was elected President of CIML, and S. Chappell was reelected to continue as Vice President of CIML. Outgoing President Knut Birkeland received numerous commendations regarding his leadership of CIML over the past 14 years, 1980-1994. On behalf of the United States, Chappell presented him a "Certificate of Recognition," signed by the Director of NIST, for his outstanding leadership.
- Meetings. It was agreed to hold the 30th meeting of CIML in Beijing, China, from October 23 - 27, 1995. The Development Council will also meet and hold a symposium during that period. The CIML Presidential Council was scheduled to meet for January 31 - February 1, 1995. An invitation from Canada was accepted to host the 31st meeting of CIML and the 10th Conference of Legal Metrology in Vancouver, British Columbia, in the fall of 1996.

CIML Presidential Council

The Presidential Council of CIML is its executive steering committee. Its last meeting was from January 31 - February 1, 1994 in Paris, France. The principal items on the agenda were as follows:

- A review of the current work of the Technical Committees and the status of the OIML Certificate System.
- A review of the communications efforts of BIML. A new brochure on OIML has been developed and will be published soon.
- President Faber will not consider enlarging the membership of the Presidential Council at this time. He made the following assignments to members of the Council:
 - Chappell (U.S.A.) - monitor and report on the work of the TCs and SCs.
 - Kochsieck (Germany) - monitor and report on the activities of the OIML Certificate System and the Development Council.
 - Bennett (U.K.) - chair the OIML Symposium on "weighing" to be held in September 1995.
 - Birch (Australia) - develop a draft policy on the relationship of OIML with relevant international and regional organizations.
 - Issaev (Russia) - examine and prepare a report on the role of the Presidential Council.

Activities of OIML Secretariats

This part of the report provides: (1) an identification of work, either Recommendations (Rs) or Documents (Ds), being developed in Technical Committees (TCs) and Technical Subcommittees (SCs) of specific interest to the NCWM and (2) a schedule of activities of secretariats, the U.S. National Working Groups (NWGs), and the International Working Groups (IWGs) of committees and subcommittees that have recently taken place or are planned for the near future. More details of these activities have been reported by Otto Warnlof to the Specifications and Tolerances Committee of the NCWM.

- TC1 Terminology (Poland)
A revision of the "Vocabulary of Legal Metrology" (1978 Edition) has been initiated. A preliminary list of words to be defined has been distributed by the Secretariat for comment. A initial revised draft is expected to be distributed by the end of 1995. This vocabulary will complement the "International Vocabulary of Basic and General Terms in Metrology" developed by BIPM, IEC, IFCC, ISO, IUPAC, IUPAP, and OIML (latest Edition 1993 published by ISO).
- TC3 Pattern Evaluation and Verification (U.S.A.) and TC4 Measurement Standards and Calibration and verification Devices (Slovakia)

A joint meeting of the IWGs of TC3 and TC4 was held in Paris, France, from June 12 through 15, 1995 to discuss work programs and projects of common interest. Decisions were taken that affect some 16 existing OIML Documents, most of which will undergo revision. Detailed minutes of the meeting are available upon request. In particular, the draft OIML Document "Initial Verification of Measuring Instruments Utilizing the Manufacturers Quality System" will be sent soon by the Secretariat (U.S.A.) of TC3/SC1 to BIML for distribution to CIML for review and vote.

- o TC5 Electronic Instruments (The Netherlands)

The revision of D11 "General Requirements for Electronic Measuring Instruments" was approved by CIML. It has been published and is now available.

- o TC6 Prepackaged Products (U.S.A.)

The committee draft revision of R79 "Information on Packaged Products" has been approved by the IWG. A draft revision is now being prepared by the Secretariat taking into account comments received from the IWG. It will then be sent to BIML for distribution to CIML for review and vote.

- o TC7 Instruments for Measuring Length and Associated Quantities (United Kingdom)

A first committee draft OIML Recommendation on "Multi-dimensional Measuring Instruments for Parcels" has been developed by the Secretariat (Australia) of TC7/SC5. The United States submitted comments. This draft will be discussed at an IWG meeting scheduled for September 11 - 12, 1995 in Paris, France.

- o TC8 Instruments for Measuring Quantities of Fluids (Switzerland)

- TS8/SC2 "Direct Static Mass Measurement of Quantities of Liquids" (Australia)

The Secretariat prepared a 2nd committee draft R "Direct Mass Measuring Systems for Quantities of Liquids" for comment and vote July 31, 1995.

- TS8/SC4 Dynamic Mass Measurement (U.S.A.)

A format of the test report for R105 "Direct Mass Flow Measuring Assemblies for Quantities of Liquids" has been developed and submitted for approval by CIML.

- TC8/SC6 Measurement of Cryogenic Liquids (U.S.A.)

A revised committee draft for OIML R81 "Measuring Devices and Systems for Cryogenic Liquids" is being developed by the NWG.

- o TC9 Instruments for Measuring Mass and Density (U.S.A.)

A revision of R60 is being developed by the NWG.

A meeting of the IWG for TC9 will be held in conjunction with TC9/SC2 in Paris, France, from September 18 - 20, 1995. The status of the current work projects will be reviewed.

- TC9/SC1 Nonautomatic Weighing Instruments (Germany and France)

An OIML Seminar "Weighing Towards the Year 2000" will be held in Paris, France, from September 13 - 15, 1995. Five papers will be presented at the Seminar by persons attending from the United States.

- TC9/SC2 Automatic Weighing Instruments (United Kingdom)

Executive Committee

The draft revision of R51 on "Checkweighing and Weight Grading Machines" including test procedures and report forms was distributed to CIML for comment and vote. The U.S.A. voted yes with comments.

The draft revision of R61 on "Automatic Gravimetric Filling Machines (Hoppers)" including test procedures and report forms was distributed to CIML for review and vote. The U.S.A. voted yes with comments.

The draft revision of R106 "Automatic Rail Weighbridges" including test procedures and a report form was distributed to CIML for comment and vote. The U.S.A. voted no with comments.

A meeting of the IWG for TC9/SC2 will be held in conjunction with TC9 in Paris, France, from September 18 - 20, 1995. The status of the current work projects will be reviewed.

**Appendix G. NIST and NCWM Publication Summary
Fiscal Year 1995**

NIST Publications - Actual Costs				
NIST Publication Title	Quantity	Total Printing Costs	Total Postage (NIST)	Total Printing & Postage
Handbook 44 1995 edition	3,900	\$5,767	\$5,772	\$11,539
SP 854 Report of 79th NCWM	4,200	10,785	5,624	16,409
Handbook 130 1995 edition	3,800	6,893	3,200	10,093
Handbook 133 Fourth Supplement	2,100	2,174	2,205	4,379
Totals (All NIST Expense)	14,000	\$25,619	\$16,801	\$42,420

NCWM Publications and Membership Mailing - Estimated Costs (Printed at Conference Expense Publications Mailed at NIST Expense)					
1995 Pub 2 Membership Directory	2,700	\$9,500 (NCWM)		\$3,996	\$13,496
Pub 5 Index of Dev Evals, 7th Ed	500		\$2,580 (NTEP)	740	3,320
Pub 15 Interim Agenda	3,700	3,700 (NCWM)		6,965 (First Class)	10,665
Pub 16 Prog & Committee Reports (Announcement Book)	4,000	9,200		5,624	14,824
Totals	10,900	\$22,400 (NCWM)	\$2,580 (NTEP)	\$17,325	\$42,305

1995-96 NCWM Membership Renewals and Invitations to Join - Actual Costs (In May of 1996, NIST will pay postage & mailing service costs)				
Renewals and Invitations (All at NCWM Expense)	Quantity	Total Printing & Mailing Service	Total Postage	Total Printing, Postage & Mailing Service
Totals	27,000	(\$1,130 printing \$1,165 mail serv) Total \$2,295	\$8,640	\$10,935

Summary				
Total Printing at NIST Expense		Total Postage at NIST Expense		NIST Grand Total (Postage and Printing)
\$25,619		\$34,126		\$59,745
Total NCWM Printing Costs	NCWM Postage (1995 Only)	NCWM Grand Total (1995 Only: Postage, Printing, & Mailing Service)	NTEP (Printing Only Applicable)	
\$23,530	\$8,640	\$33,335	\$2,580	

Report of the Laws and Regulations Committee

Sharon Rhoades, Chairman
Chief Enforcement Officer
Arizona Department of Weights and Measures

200 Introduction

This is the Report of the Laws and Regulations Committee for the 80th Annual Meeting of the National Conference on Weights and Measures (NCWM). It is based on the Interim Report offered in the Conference "Program and Committee Reports" (NCWM Publication 16), the Addendum Sheets issued at the Annual Meeting, and actions taken by the membership at the Voting Session of the Annual Meeting.

Table A identifies items in the report by Reference Key Number, item title, and page number. The first three digits of the Reference Key Numbers of the items are assigned from the subject series listed below. Voting issues are indicated with a "V" after the item number. Consent calendar items are marked with a "VC." Items marked with an "I" after the item number are for information. The items marked with a "W" were withdrawn by the Committee. Table B identifies appendices A-F, and Table C shows the voting results from the 80th NCWM. This Report contains recommendations to revise or amend National Institute of Standards and Technology (NIST) Handbook 130, 1995 edition, "Uniform Laws and Regulations," or NIST Handbook 133, "Checking the Net Contents of Packaged Goods," Third Edition and Supplements 1 (1990), 2 (1991), 3 (1992), and 4 (1994). Revisions proposed by the Laws and Regulations Committee are shown in **bold face print** by crossing out what is to be deleted and underlining what is to be added. New items proposed for the handbooks are designated as such and shown in **bold face print**. Proposals presented for information are shown in *italic* type unless otherwise identified as informational. "SI" means the International System of Units. "FPLA" means the Federal Fair Packaging and Labeling Act. The section mark, "§," is used in most references to sections in the text and is followed by the section number and title, (for example, § 1.2. Weight.) When used in this report the term "weight" means "mass."

Subject Series

Handbook 130 - General	210 Series
Uniform Laws	220 Series
Weights and Measures Law (WML)	221 Series
Weighmaster Law (WL)	222 Series
Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Inspection Law	223 Series
Uniform Regulations	230 Series
Packaging and Labeling Regulation (PLR)	231 Series
Method of Sale of Commodities Regulation (MSCR)	232 Series
Unit Pricing Regulation (UPR)	233 Series
Voluntary Registration of Servicepersons and Service Agencies	
for Commercial Weighing and Measuring Devices Regulation (VREG)	234 Series
Open Dating Regulation (ODR)	235 Series
National Type Evaluation Regulation (NTER)	236 Series
Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Regulation	
Interpretations and Guidelines	238 Series
Price Verification	239 Series
 NIST Handbook 133 - General	250 Series
Other Items	260 Series

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Table C

Reference Key No.	House of State Representatives		House of Delegates		Results
	Yes	No	Yes	No	
Consent Calendar	40	0	45	0	Passed
232-1	36	2	45	3	Passed
239-1C (Motion to Hear Amendment)	29	2	36	3	Passed
239-1C (Motion to Amend Withdrawal of Item)	21	16	38	8	Failed
250-1 (Measure of Conference Support of Informational Item)	39	0	43	0	Passed
200 (Report in its Entirety)	40	0	46	0	Passed

Details of All Items
(In order by Reference Key Number)

210

NIST Handbook 130 - General

210-1

I Ensuring that the PLR is Identical to Federal Regulations

The Food and Drug Administration (FDA) may publish final regulations on metric labeling in 1995. These regulations will be reviewed and additional changes made to NIST Handbook 130 to ensure that the requirements in the NCWM Uniform Packaging and Labeling Regulation are identical to those in Federal regulations, as required under the Fair Packaging and Labeling and Nutrition Labeling and Education Acts. If the FDA issues its revised regulations prior to the publication of the 1996 edition of Handbook 130, and if the revisions change the requirements in the Handbook that are applicable to products regulated by the FDA, the National Institute of Standards and Technology will issue an addendum to the 1995 Handbook.

One possible difference between the PLR and the FDA regulations involves the "largest whole unit" requirement. The PLR and the Federal Trade Commission's packaging and labeling regulations require use of the largest whole unit in quantity declarations; therefore, quantity declarations of more than 16 ounces have to be declared in pounds and fractions of a pound rather than in ounces. Some manufacturers have requested that the FDA permit the use of either pounds or ounces on some food products. If the FDA permits the use of either pounds or ounces for quantities over 16 ounces, the PLR will be amended to indicate the change and note that it applies only to food products.

221

Uniform Weights and Measures Law

221-1

VC § 1. Definitions

(This item was adopted as part of the consent calendar.)

Recommendation: Amend Section 1. Definitions of the Uniform Weights and Measures Law by adding the definition for commercial weighing and measuring equipment from NIST Handbook 44, General Code G-A.1. Commercial and Law Enforcement Equipment:

1.13. Commercial Weighing and Measuring Equipment. -- The term "commercial weighing and measuring equipment" means weights and measures and weighing and measuring devices commercially used or employed in establishing the size, quantity, extent, area, or measurement of quantities, things, produce, or articles for distribution or consumption, purchased, offered, or submitted for sale, hire, or award, or in computing any basic charge or payment for services rendered on the basis of weight or measure.

Background: The NCWM Committee on Education, Administration, and Consumer Affairs (Administration Committee) has recommended changes to the Uniform Weights and Measures Law to more clearly define the scope of weights and measures activities and to reflect current enforcement practices. (See Item 403-1 and Appendix I in the Administration Committee's Report to the 79th NCWM and Item 404 in its Report to the 78th NCWM for more information.) The proposed changes were developed by a weights and measures director who had experienced problems with a State program auditor as a result of wording in NIST Handbooks 130 and 44. The Administration Committee proposed that Section 1. of the Uniform Weights and Measures Law (WML) be amended to include the definition for "commercial weighing and measuring equipment" that is given in paragraph G-A.1. of the General Code in NIST Handbook 44 (see also Item 221-2).

The Administration Committee's justification for the proposed change is that the current definition of "weights and/or measures" includes weights and measures of every kind, including such devices as measuring cups, bathroom scales,

carpenter's tapes, wristwatches, etc. Weights and Measures officials are aware of the intent of the definition and the law, but some non-weights and measures people (such as auditors and lawyers) may have different interpretations, causing confusion and problems. The Committee supports the recommendation of the Administration Committee and proposes the recommended changes to Section 1. presented above.

221-2A VC § 12. Powers and Duties of the Director - Amend Paragraph (i)

(This item was adopted as part of the consent calendar.)

Recommendation: Amend Section 12 of the Uniform Weights and Measures Law to read:

Section 12. Powers and Duties of the Director

The director shall:

- (i) Have the authority to inspect and test commercial weights and measures kept, offered, or exposed for sale.

Background: See Item 221-1 for background. The Administration Committee has recommended a change to Section 12, paragraph (i) of the WML to make it clear that the director has the authority, but is not required, to inspect weights and measures kept, offered, or exposed for sale.

The Administration Committee's justification for the proposed change is that the current wording, as interpreted by potentially influential non-weights and measures officials, places a burden and responsibility on the director to inspect weights and measures kept, offered, or exposed for sale. In most cases, workload demands prevent any inspection or testing of devices that are kept for sale until they are sold and installed in a commercial application. Also, much of the inspection portion of the examination of a device kept or exposed for sale would generally be wasted effort since the final installation is often critical to a device's correctness and performance. Additionally, it is all but impossible to test many devices kept or offered for sale, such as livestock and vehicle scales and many liquid-measuring devices, without incurring the expense of installing them. The Committee supports the recommendation of the Administration Committee and recommends the change to Section 12 presented above.

221-2B VC § 12. Powers and Duties of the Director - Amend Paragraph (l)

(This item was adopted as part of the consent calendar.)

Recommendation: Amend Section 12, paragraph (l) of the Uniform Weights and Measures Law as follows:

Section 12. Powers and Duties of the Director

The director shall:

- (l) Approve for use, and may mark, such commercial weights and measures as are found to be correct, and shall reject and order to be corrected, replaced, or removed and mark as rejected such commercial weights and measures as are found to be incorrect. Weights and measures that have been rejected may be seized if not corrected within the time specified or if used or disposed of in a manner not specifically authorized. The director shall remove from service condemn and may seize the weights and measures found to be incorrect that are not capable of being made correct.

Background: The Administration Committee proposes amending Section 12, paragraph (l), of the WML to reflect more accurately the enforcement actions now taken by most jurisdictions. The justification for the proposed change is that the only definition of "reject" found in NCWM documents appears in Section 5.2. of the Fundamental Considerations

Appendix in Handbook 44. That section states that if an official finds a device "that does not conform to all official requirements, the official is required to reject it and prohibit its use until the device is brought into proper conformance."

A survey conducted by the Central Weights and Measures Association indicated that most jurisdictions finding a device that fails to meet certain official requirements (such as marking requirements; access for testing; or even small out-of-tolerance errors, especially those in favor of the customer) allow a reasonable amount of time for the owner to bring the device into conformance before prohibiting its use and possibly putting the owner out of business. The survey also indicated that many jurisdictions have different definitions of "condemn," many of which conflict with the implied definition of "condemned" found in sections 6 and 7 of Fundamental Considerations, that is, "permanently out of service." Replacing the word "condemned" with "remove from service" allows for flexibility in a jurisdiction's actions and use of terminology. The Committee supports the recommendation to change Section 12, paragraph (l) presented above.

221-3 VC § 23. Civil Penalties - Section Review

(This item was adopted as part of the consent calendar.)

Recommendation: Reorganize and revise § 23. Civil Penalties as follows. If this change is adopted the same revisions will be made in other uniform laws and regulations that include similar requirements.

Section 23. Civil Penalties

23.1. Assessment of Penalties. Any person who by himself or herself, by his or her servant or agent, or as the servant or agent of another person, commits any of the acts enumerated in § 22 may be assessed by the _____ a civil penalty of:

- (a) not less than \$__ nor more than \$__ for a first violation,
- (b) not less than \$__ nor more than \$__ for a second violation within __ from the date of the first violation, and
- (c) not less than \$__ nor more than \$__ for a third violation within __ from the date of the first violation.

23.2. Administrative Hearing. Any person subject to a civil penalty shall have a right to request an administrative hearing within __ days of receipt of the notice of the penalty. The director or his/her designee shall be authorized to conduct the hearing after giving appropriate notice to the respondent. The decision of the director shall be subject to appropriate judicial review.

23.3. Collection of Penalties. If the respondent has exhausted his or her administrative appeals and the civil penalty has been upheld, he or she shall pay the civil penalty within __ days after the effective date of the final decision. If the respondent fails to pay the penalty, a civil action may be brought by the director in any court of competent jurisdiction to recover the penalty. Any civil penalty collected under this Act shall be transmitted to _____.

Background: Since this section was incorporated into the WML, several States have had to make various modifications to get the section to conform to their constitutional requirements. The Committee has also received comments requesting that the section be reviewed to determine if any revisions or amendments are needed to update the section. At the Interim Meeting, the Committee decided to survey the States to determine if more uniform wording could be developed for § 23. Following the meeting, the Committee asked the States for copies of the civil penalties section in their weights and measures laws. Twenty-eight States responded. The submittals have little in common except for a listing of offenses and amounts of the penalties, which also vary considerably. Since there is not enough agreement between the States to

suggest alternative wording for § 23, the Committee is recommending only minor changes to the section to clearly differentiate between civil penalties and civil actions.

221-4

Additional Amendments to the WML Regarding Price Verification

See Items 239-1B and 239-1C in this agenda for proposed amendments to the WML that are related to the Examination Procedure for Price Verification.

223

Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Inspection Law

223-1

VC Revisions to the Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Inspection Law

(This item was adopted as part of the consent calendar.)

Recommendation: Adopt the proposed law as shown in Appendix C.

Background: At the Annual Meeting, the Petroleum Subcommittee (Subcommittee) reported on its recommendations for revisions to the Law. (See Appendix B on page 232 of "Report of the 79th NCWM" for a discussion of the proposed revisions.) At the Interim Meeting, the Committee and the Subcommittee held a joint public hearing on the proposed revisions where all of the comments received supported adoption of the changes. The Subcommittee met after the joint meeting with the Committee to plan future work. See Appendix B for a summary of the meeting and additional proposed changes to the Uniform Law that were adopted at the NCWM Annual Meeting.

Additional amendments to the uniform law were recommended by the Petroleum Subcommittee following the 1995 Interim Meeting of the Committee. These recommendations are described in Appendix B of this Report, the Committee will consider these recommendations at the 1996 Interim Meeting.

231

Uniform Packaging and Labeling Regulation

231-1

VC Removal of Sections on Variations From Declared Dimensions

(This item was adopted as part of the consent calendar.)

Recommendation: Remove the following sections relating to variations from the labeled quantities of various commodities from the Uniform Packaging and Labeling Regulation of Handbook 130 and make editorial changes to § 12.2 to reflect these changes:

10.9.3. Textiles: Variations from Declared Dimensions. --

(a) For an item with any declared dimension equal to or greater than 60 centimeters or 24 inches, a minus variation greater than 3 percent of the declared dimension and a plus variation greater than 6 percent of the declared dimension should be considered unreasonable.

(b) For an item with any declared dimension less than 60 centimeters or 24 inches, a minus variation greater than 6 percent of that declared dimension and a plus variation greater than 12 percent of that declared dimension should be considered unreasonable. (Added 1971)

10.11. Mulch: Variations from Declared Volume.^[NOTE 8] -- An individual package minus variation greater than 5 percent of the declared volume shall be considered unreasonable.

NOTE 8: In addition, the average net contents of lots, shipments, or deliveries must equal or exceed the labeled net contents. See § 12.1. Packaging Variations.

10.12. Polyethylene Products: Variations from Declared Thickness^[NOTE 8, see page 89]

(a) Any single measurement of thickness:

- (1) When the labeled thickness is less than 25.4 micrometers [1 mil (0.001 in)], any individual thickness measurement of a polyethylene product may be as much as 35 percent below the labeled thickness (i.e., at least 65% of the labeled thickness).^[NOTE 9]
- (2) When the labeled thickness is 25.4 micrometers [1 mil (0.001 in)] or larger, any individual thickness measurement of a polyethylene product may be as much as 20 percent below the labeled thickness (i.e., at least 80% of the labeled thickness).^[NOTE 10]

(b) Average thickness for a single package:

The average thickness of a single package of polyethylene sheeting, film, or bags may be as much as 4 percent below the labeled thickness (i.e., at least 96% of the labeled thickness).

NOTE 9: ASTM Standard D2103-92, "Standard Specification of Polyethylene Film and Sheeting," 1992.

NOTE 10: ASTM Standard D-4397-91, "Specification for Polyethylene Sheeting for Construction, Industrial and Agricultural Applications," 1991.

10.13. Polyethylene Products: Variations from Declared Weight^[NOTE 8, see page 89] -- An individual package minus variation greater than 4 percent of the declared weight shall be considered unreasonable.

Background: The Western Weights and Measures Association (WWMA) recommended removal of those sections in the Uniform Packaging and Labeling Regulation (PLR) that relate to variations from the labeled quantities of various commodities. One reason they cite is that there have been instances where manufacturers have used these variations as tolerances; as long as they were within the limits stated in Handbook 130, the manufacturers believed they were in compliance, when in fact their products were short measure. In addition, WWMA thinks that the sections on variations from the labeled quantity do not belong in Handbook 130 because they have no relevance to labeling requirements. According to the WWMA, references to Maximum Allowable Variations (MAV's) in NIST Handbook 133, Checking the Net Contents of Packaged Goods, (HB 133) are understandable because they are described in the context of the HB 133 sampling procedure. However, a person unfamiliar with or unaware of HB 133 may, when reading HB 130, misunderstand the use of the variations and use them as tolerances. The Committee supports the WWMA recommendation.

231-2

VC § 10.10. Packaged Seed - Metric Labeling

(This item was adopted as part of the consent calendar.)

Recommendation: Amend Section 10.10. (b)(ii) by striking the word "or" and inserting "and" as shown below:

10.10. Packaged Seed. -- Packages of seeds intended for planting, weighing less than 225 grams or 8 ounces, shall be labeled in full accord with this regulation except as follows:

- (a) The quantity statement shall appear in the upper 30 percent of the principal display panel.

- (b) The quantity statement shall be in terms of:
 - (i) the largest whole SI unit for all packages with weights up to 7 grams, and
 - (ii) in grams and or in ounces for all other packages with weights less than 225 grams or 8 ounces.
- (c) The quantity statement for coated seed, encapsulated seed, pelletized seed, preplanters, seed tapes, etc., shall be in terms of count.

Background: In 1992, the National Conference on Weights and Measures adopted metric revisions to the Uniform Packaging and Labeling Regulation. During the revision process, § 10.10. Packaged Seed was not amended to require packers to include both SI metric and inch-pound units on package labels for seed weighing between 7 grams and 225 grams (8 oz). This omission has resulted in an inconsistency in the metric requirements for packages of seeds of different sizes. Specifically, the current subsection (b)(i), allows packages of seed weighing over 7 grams up to 225 grams to be labeled in either grams or ounces; however, packages weighing more than 225 grams must have SI and inch-pound units. To correct this inconsistency, the change shown above is recommended for adoption.

231-3 W § 13. Retail Sale Price Representations - Section Review

(This item was withdrawn.)

At the Annual Meeting, the Committee discussed the need to prioritize its time and resources to focus on issues that provide the greatest benefit to a majority of NCWM members. The Committee reviewed the agenda and withdrew items that it believes are not issues of national importance at this time. Since the Committee received no comments on this item it is being withdrawn until recommendations for revisions are received from the regional associations.

Background: This section relates to "cents-off" representations, "introductory offers," and "economy" size packages and was incorporated into the PLR more than 20 years ago. Similar requirements are contained in Federal regulations adopted by the Food and Drug Administration (FDA) and the Federal Trade Commission (FTC). Over the past few years, several States have indicated that they do not enforce the provisions of these sections because they appear to be out-of-date, consume too much inspection time for the benefit received, or are in some cases impossible to enforce. Several retailers have indicated that compliance with the sections would be burdensome or impractical and that consumers would probably not benefit from rigid enforcement. Consequently, the Committee initiated a review of Section 13.

At the 1995 NCWM Interim Meeting, it was reported that the FTC and the FDA have indicated an interest in retaining the retail sale price requirements in their regulations; however, they said they would consider changes recommended by the Conference. The Committee asked the Office of Weights and Measures to work with industry trade associations through the Price Verification Work Group and with representatives of concerned Federal agencies to identify problems with the current requirements and develop recommendations for changes that would make the requirements less burdensome and easier to enforce.

232 Uniform Regulation for the Method of Sale of Commodities

232-1 V § 1.6. Fluid Milk Products and § 1.7. Other Milk Products - Eliminate Size Restrictions

(This item was adopted.)

Recommendation: Remove the size restrictions from § 1.6. and § 1.7., but retain the general method of sale, and delete Note 5 from § 1.7.1.:

1.6. Fluid Milk Products. -- All fluid milk products, including but not limited to milk, lowfat milk, skim milk, cultured milks, and cream shall be sold in terms of fluid volume.

~~packaged for retail sale only in volumes per § 1.6.(a), or § 1.6.(b), provided SI sizes less than 100 milliliters and inch-pound sizes less than 1 gill shall be permitted.~~

~~(a) SI Volumes—125 milliliters, 250 milliliters, 350 milliliters, 500 milliliters, 1 liter, or multiples of 1 liter.~~

~~(b) Inch-Pound Volumes—1 gill, 1/2 liquid pint, 10 fluid ounces, 12 fluid ounces, 1 liquid pint, 1 liquid quart, 1/2 gallon, 3 liquid quarts, 1 gallon, 1 1/2 gallons, 2 gallons, 2 1/2 gallons, or multiples of 1 gallon.~~

1.7. Other Milk Products. -- Cottage cheese, cottage cheese products, and other milk products that are solid, semi-solid, viscous, or a mixture of solid and liquid, as defined in the Pasteurized Milk Ordinance of the U.S. Public Health Service, as amended in 1965, shall be sold in terms of weight, ~~provided cottage cheese, cottage cheese products, sour cream, and yogurt shall be packaged for retail sale only in weights per § 1.7.(a) or § 1.7.(b) and provided further, the total net weight of multiunit packages need not comply with § 1.7.(a) or (b) if their individual units comply.~~

NOTE 4: Except see 1.7.1. for frozen yogurt.

~~(a) SI Masses—25, 50, 75, 100, 125, 150, 175, 200, 250, 375, 500, 750 grams; 1, 2, and 4 kilograms.~~

~~(b) Inch-Pound Weights—1, 2, 3, 4, 5, 6, 8, 12, 16, 24, 32, 64, 80, and 128 ounces avoirdupois.~~

1.7.1. Factory Packaged Ice Cream and Similar Frozen Products. -- Ice cream, ice milk, frozen yogurt, and similar products shall be kept, offered, or exposed for sale, or sold in terms of fluid volume.

NOTE 5: For prepackaged measure containers, intended to be used only once, to determine in advance of sale the quantity of a commodity such as ice cream, ice milk, or sherbet on the basis of liquid measure, the size restrictions noted in § 4.43., Measure Containers, of National Institute of Standards and Technology Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices," apply. Handbook 44 requires capacities of such measure containers to be a multiple of or a binary submultiple of a quart or liter, except that any capacity less than 0.25 liter or 1/2 liquid pint is permitted.

Background: This was item 232-3 on page 212 in the "Report of the 79th NCWM." Please see that section for further discussion of this issue. The Western and Southern Weights and Measures Associations support the elimination of the size restrictions for dairy products contained in § 1.6. Fluid Milk Products and § 1.7. Other Milk Products. The Committee recommends the elimination of size restrictions for these products for the following reasons: (1) the availability of unit pricing reduces the need to limit sizes; (2) manufacturers of products subject to size limitations are at a disadvantage in providing their product in a variety of sizes that compete with other products; (3) package size restrictions limit a manufacturer's flexibility to respond to consumer preference and the changing demographics of the marketplace; (4) requiring industry to continually request changes through the NCWM for package sizes is time-consuming and hampers industry's ability to respond to consumer preference; (5) enforcement of package size requirements is difficult or impossible to justify, especially if the products are offered for sale in stores where unit pricing is available; (6) enforcement of specific sizes can limit competition and may hurt consumers more than help them; (7) package proliferation is controlled by market factors, such as the cost of store shelf space, competition, and consumer choice; and (8) consumers purchase millions of other products in hundreds of different sizes using only the net quantity information declared on the package to perform value comparisons. The International Dairy Foods Association (IDFA), which includes the Milk Industry Foundation and the International Ice Cream Association, supports the elimination of package size requirements for dairy products so that consumers can have more choice. Consumers have not experienced the potential benefits of unrestricted package size selection for milk and ice cream products. The industry is also aware

that, for the most part, other fluid drink products are not subject to similar restrictions. Finally, some members of the IDFA believe that the elimination of the package size requirements could enable their products to compete more effectively within the marketplace. Comments on this proposal are solicited from consumers, trade groups, and other interested parties.

232-2 VC § 3.3. Machine-Vended Commodities

(This item was adopted as part of the consent calendar.)

Recommendation: Amend § 3.3. as follows:

3.3. Labeling of Machines That Dispense Packaged Commodities. -- All vending machines dispensing packaged commodities shall indicate:

(a) product identity;

(b) net quantity; and

**(c) ~~name, address, and telephone number of~~ the party responsible for the vending machine.
Examples: "For service or refunds contact: the XYZ Cola Company, Rockville, MD 20800; Telephone no.: 301-598-1000." or "See attendant inside for refunds."**

(d) The requirements for product identity and net quantity can be met either by display of the package or by information posted on the outside of the machine.

Background: This was item 232-7 on page 219 in the "Report of the 79th NCWM." The recommendation is to amend (c) in § 3.3. Machine Vended Commodities to exempt firms from having to indicate a statement of responsibility on a vending machine at a location where the responsible party is available to resolve any monetary discrepancies for consumers. The amendment will bring the section into agreement with Paragraph G-UR.3.4. in the General Code of NIST Handbook 44, which was amended at the 78th NCWM to include this exemption (see Item 310-3 UR.3.4. Responsibility, Money-Operated Devices in the Report of the 78th NCWM 1993, page 292). Section 3.3. was originally intended to apply to equipment installed either in unattended sites or those where the identity of the party responsible to correct any problems is not readily apparent. The Committee believes that a statement of responsibility is not needed in situations where the responsible party is readily known and available. Comments received on this item at the 79th Annual Meeting suggested additional changes that could not be made before consulting with the S&T Committee. It was then changed from a voting issue to an information item so that the suggested amendments can be considered in cooperation with the S&T Committee at the 1995 Interim Meeting. During the discussion of the item at the Annual Meeting, it was noted that the title of the section was confusing. The Central Weights and Measures Association suggested that the title be changed to "Machines That Vend Commodities" or something else that more clearly relates to the content of the section.

At the 1995 Interim, a new title was developed for § 3.3. In addition, the Committee decided that labeling was needed on all vending machines to ensure that consumers know whom to contact to request a refund. Committee members agreed, however, that vending machines at locations where employees are present and responsible for resolving any monetary discrepancies for customers should not be required to be labeled with such information as the address and telephone number of the responsible party. New wording was developed for § 3.3.(c) that will provide more flexibility in labeling and will still provide information for consumers.

232-3 I Lunch Packages - Packages of Meat and Other Foods Including Drinks

Background: A lack of uniformity in the labeling of combination packages sold in retail food stores as lunchpacks or snackpacks raised questions about the appropriate quantity declarations for these packages. In most cases, the packages include products such as meat or poultry that fall under United States Department of Agriculture (USDA) jurisdiction, and cheese, crackers, candy bars, and fruit juices that fall under FDA jurisdiction. FDA and USDA have discussed this

issue, and USDA has decided to address the problem through a rulemaking process. As an interim measure, the USDA Food Safety and Inspection Service has issued a policy memorandum (No. 124) to its Branch Chiefs on the Declaration of Net Quantity of Contents on Combination Packages Containing Liquid and Solid Products (see Appendix F). The Committee recommends that weights and measures jurisdictions refer to this policy memo for guidance on the labeling requirements for these products. This item will be reconsidered by the Committee when USDA completes its rulemaking process to determine if changes are needed to the PLR.

232-4 W § 2.12. Hardwood Lumber - Retail Sales

(This item was withdrawn.)

The Committee discussed the need to prioritize its time and resources to focus on issues that provide the greatest benefit to a majority of NCWM members. The Committee reviewed the agenda and withdrew items that it believes are not issues of national importance at this time. Since the Committee received no comments on this item, it is being withdrawn until the Committee receives recommendations for proposed revisions from the regional associations.

Background: In 1993 the NCWM adopted § 2.12.. Hardwood Lumber as the method of sale for retail sales of all hardwood lumber except flooring. Please see Item 232-4 on page 223 in the Report of the 78th NCWM for additional background on this issue. Since the adoption of this section, the NIST Office of Weights and Measures has received comments from several jurisdictions requesting that § 2.12. be amended to include hardwood flooring. These jurisdictions believe that the requirements of the section would be effective in addressing the same types of errors in quantity claims for hardwood flooring as those cited for lumber during discussions on the need for § 2.12.

Prior to the 1995 Interim Meeting, the Committee proposed to revision to § 2.12. to include hardwood flooring and requested comments from weights and measures officials, trade associations, and consumers to determine if the proposal was acceptable. The Committee received comments from the National Oak Flooring Manufacturers' Association (NOFMA) and the National Hardwood Lumber Association indicating that the requirements in § 2.12. may not be appropriate for hardwood flooring. NOFMA submitted an alternative method of sale based on current industry practices. The Committee will carry this item over and work with industry representatives to develop a proposed method of sale for consideration at the next Interim Meeting.

232-5 W § 2.13. Polyethylene Products

(This item was withdrawn.)

Background: The Committee received and considered a proposal from the California Film Extruders & Converters Association (CFE&CA) to eliminate the requirements for "area" declarations on polyethylene sheeting products in favor of modifying the length and width requirement to be in terms of lineal meters or lineal feet. They also recommended the elimination of "capacity" declarations on sandwich bags and bags used for nonconsumer uses. Comments were requested on this issue prior to the Interim Meeting. The Committee heard from other segments of the polyethylene industry that were not in support of CFE&CA's proposal. Due to of the lack of consensus within the industry, the Committee decided to withdraw this item.

232-6 Standardized Size Descriptions for Shrimp

Comment: This was item 232-2 under the MSCR in the 1995 NCWM Interim Meeting Agenda. It has been moved to Series 238 - NIST Handbook 130, Interpretations and Guidelines under Item 238-2 in this agenda.

233 Uniform Unit Pricing Regulation

233-1 I Review of the Regulation

a. Review of the Regulation - The Committee received comments from weights and measures officials and industry indicating that revisions to this regulation are needed to make it more effective in providing guidance so that retailers can provide meaningful information to consumers in order to make value comparisons. The Committee requests that interested parties provide comments and suggested revisions by November 1, 1995, so this item can be considered at the Interim Meeting in 1996.

b. Cost-per-Load for Laundry Detergent - The Committee considered the proposal to base the unit price for laundry detergents on a 7-pound load of laundry. We have not received any comments from weights and measures officials supporting the cost-per-load approach to unit pricing. Based on information received at the public hearing, the Committee believes that there is very little industry support for this proposal. Procter and Gamble does not support the recommendation because: (1) the proposal is not supported by the Soap and Detergent Association; (2) it is based on a derived unit of measure; and (3) a specific derived value may restrict the industry's ability to provide meaningful information on the number of loads of clothes that may be washed as laundry products, washing machine technology, and consumer habit change. However, a spokesperson for Church & Dwight Company supported this proposal. As stated above, the Committee is reviewing its agenda and is withdrawing items that it believes are not issues of national importance at this time. The Committee decided not to consider this proposal until it is clear that (1) weights and measures officials support this item,(2) there is widespread industry support, and (3) a recommendation for adoption of a specific recommendation is received from the regional associations.

Background: The Office of Weights and Measures (OWM) was contacted by several retail trade associations requesting that the Uniform Unit Pricing Regulation (UPR) be reviewed to determine if the various commodity groups and pricing requirements provide consumers with the information they need for value comparisons. The Associations note that many commodity groups for nonfood products are not included in the table and several of the required units may not be appropriate for many of the new products now being sold in stores. The appropriate SI metric units and pricing also need to be considered.

At the Interim Meeting, it was reported that the Grocery Manufacturers Association (GMA) believes that it would be worthwhile to expand the commodity listing in the UPR. GMA recommends that any consideration of metric units at this time should be in the context of providing metric listings in addition to, and not in place of, the current inch-pound units. They also suggest that the current list be reviewed and possibly amended to reflect market practices, especially the units (for example, pounds versus ounces) on which unit pricing is based for various commodities. A representative of the Food Marketing Institute said that her association agrees with GMA that portions of the uniform regulation need to be updated.

236 Uniform National Type Evaluation Regulation

236-1 I Draft Revision of the National Type Evaluation Regulation

Background: A draft revision of the Uniform Regulation for National Type Evaluation has been prepared to incorporate several of the policies and guidelines adopted by the NCWM Executive Committee and appearing in NCWM Publication 14. A draft reflecting the last revisions is presented in Appendix A (page 104) of this Report. Comments received at the Interim Meeting persuaded the Committee that additional time is needed to make improvements and changes to the draft. The Committee will work with the NTEP Board of Governors to be sure the regulation reflects the latest NTEP policies and guidelines.

237

Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Regulation

237-1

VC Revisions to the Regulation

(This item was adopted as part of the consent calendar.)

Recommendation: Adopt the revised Uniform Regulation for Engine Fuels, Petroleum Products, and Automotive Lubricants shown in Appendix D.

a. The Committee is amending its Interim Report by deleting the parenthetical statement in Section 2.8. The Committee agrees with the Petroleum Subcommittee that, for uniformity, only ASTM standards should be referenced in the Uniform Regulation. The Committee believes that a regulation should not offer choices between two different standards, since confusion or conflict may result if one of the standards is amended.

2.8. Liquefied Petroleum (LP) Gases shall meet ASTM D 1835, "Standard Specification for Liquefied Petroleum (LP) Gases."

Note: Also reference Gas Processors Association 2140, "Liquefied Petroleum Gas Specification and Test Methods."

b. The Committee believes that language addressing enforcement action should not be included in the regulation. The proposed language may cause problems for some States that adopt this regulation automatically. The interpretation of "statistically significant" is not specified and interpretations could vary widely, leaving fuel testing programs to guess at the appropriate numbers of samples. This situation could compromise some State programs and does not reflect current practices in fuel testing programs.

Section 7. Test Methods and Reproducibility Limits

7.1. ASTM Standard Test Methods referenced for use within the applicable Standard Specification shall be used to determine the specification values for enforcement purposes.

7.2. Reproducibility Limits

7.2.1. AKI Limits. -- When determining the antiknock index (AKI) acceptance or rejection of a gasoline sample, the AKI reproducibility limits as outlined in ASTM D 4814 Appendix X1 shall be acknowledged for enforcement purposes. ~~with the exception outlined in 7.2.4.~~

7.2.2. The reproducibility limits of the ASTM standard test method used for each test performed shall be acknowledged for enforcement purposes except as indicated in 7.2.1.

7.2.3. Dispute Resolution. -- In the event of a dispute over a reported test value, the guidelines presented in the most recent version of ASTM D 3244, "Standard Practice for Utilization of Test Data to Determine Conformance with Specifications," shall be used to determine the acceptance or rejection of the sample.

7.2.4. When Enforcement Action May Be Taken. ~~The Director may initiate enforcement action in the event that, based upon a statistically significant number of samples, the average test result for products sampled from a particular person is greater than the maximum or less than the minimum legal limits (specification value), posted values, certified values, or registered values.~~

c. Petroleum Subcommittee - The Committee wishes to commend the members of the Petroleum Subcommittee for all their hard work and the excellent product they produced in the proposed revisions of the Uniform laws and regulations. The Subcommittee will continue to serve as the focal point for petroleum-related issues for the NCWM and will be called on to provide technical guidance and assistance in other NCWM projects when the need arises.

In view of the need to prioritize the Committee's projects and make the best use of NCWM resources, the Committee intends to focus on issues that provide the greatest benefit to the NCWM membership and the public. As part of this effort, the Committee will provide the Subcommittee with guidance on the issues that it should address on its agenda. The Committee has identified two tasks for the Subcommittee to complete:

1. The Committee has assigned the Subcommittee the task of defining grades for diesel fuel based on Cetane ratings that cannot be addressed until the ASTM finishes its ongoing work on the issue. The Chairman of the Subcommittee will be asked to keep the Committee advised of the status of the ASTM work and the Committee will work with the Subcommittee to develop a proposal for NCWM consideration at the appropriate time.
2. The Subcommittee should complete its work on the "Petroleum Products Sampling Procedures and Safety Manual" by the 1996 Interim Meetings so that this important publication can be distributed to the NCWM membership and other interested parties early next year.

To ensure coordination between the Committee and the Subcommittee, the Chairman of the Subcommittee will work closely with the Chairman of the Committee to develop and prioritize the Subcommittee's future work plan, meeting agendas, and other matters as issues arise.

Gasoline-Oxygenate Labeling. - The Committee does not believe that there is enough support in the NCWM for the Subcommittee to undertake any further work regarding the labeling of gasoline-oxygenate blends at this time. The Committee noted that the Northeastern Association is on record as opposing further consideration of this issue now. The Committee agreed that it would not consider this issue because it is clear that there is no consensus among the interested industries on whether the current requirements needs to be changed. Another reason for this action is that the Committee is concerned that the NCWM does not have the financial resources to support further work on this issue under these circumstances. Therefore, the Committee will not address this issue until it is clear that weights and measures officials support reconsideration, there is substantial industry consensus for the work, and recommendations for proposed revisions are received from the regional associations.

Background: At the NCWM Annual Meeting, the Petroleum Subcommittee (Subcommittee) reported on its recommendations for revisions to the Regulation (see Appendix B on page 232 of the "Report of the 79th NCWM" for a discussion of the proposed revisions.) During the public hearing conducted at the 1995 Interim Meeting, no negative comments were received on the regulation. At a joint session of the Committee and the Subcommittee following the public hearing, it was reported that the Society of Automotive Engineers (SAE) had published SAE J1616, Recommended Practice for Compressed Natural Gas Vehicle Fuel." On the recommendation of the Subcommittee, SAE J1616 was incorporated by reference into the proposed regulation as the fuel quality standard for CNG.

Other changes to the proposed regulation include: addition of the definition for "Engine Fuels Designed for Special Use" that was included in the Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Law; amendment of the definitions for "E85 Fuel Ethanol" and "M85 Fuel Methanol" to make them consistent with current American Society for Testing and Materials (ASTM) definitions; and division of § 3.11. Natural Gas into two sections: § 3.11. Compressed Natural Gas and § 3.12. Liquefied Natural Gas. At the end of the joint meeting, it was decided to go forward with a vote on the revised draft. The Subcommittee met after the joint meeting with the Committee to plan future work. See Appendix B for a summary of the meeting.

237-2 I Define Grades for Diesel Fuel Based on Cetane Ratings

Background: The Southern Weights and Measures Association proposed that a meaningful definition of "regular" diesel fuel (e.g., a cetane rating below 45) and "premium" diesel fuels (e.g., a cetane rating of 45 or more) be established so that these fuels can be accurately and clearly identified through dispenser labeling or other means. Refiners have

requested product registration from State Motor Fuel programs for diesel fuels that have been formulated to provide cleaner emissions or higher performance. Several refiners and marketers want to differentiate these grades of diesel fuels in marketing. A cetane rating could be an indicator of fuel quality similar (but not equivalent to) to the octane rating used for gasolines, and could aid motorists in comparing the value and cost of the different "grades" of diesel fuels.

The Committee discussed this issue with the Petroleum Subcommittee (Subcommittee) at the Interim Meeting. It was reported that ASTM is currently working on a standard for premium diesel fuel that covers more than cetane rating in specifying the quality of diesel fuels. (See the Subcommittee's report in Appendix B for more information on the ASTM standard.) The Committee agreed to carry this item over to permit the Subcommittee time to study the issue and develop a proposal. The Chairman of the Subcommittee will write to the Chairman of the American Society for Testing and Materials (ASTM) D-2 Committee on Petroleum Products and Lubricants encouraging ASTM to move forward on the diesel standard. The Subcommittee will then monitor the progress made on the standard to determine future action in this area.

238 NIST Handbook 130 - Interpretations and Guidelines

238-1 I Editorial Revisions

Background: The Committee agreed that this section of Handbook 130 needs to be updated. Revisions will include the addition of metric conversions and the elimination of material that is either out-of-date or no longer relevant because the issue has been addressed by the adoption of specific requirements to deal with the concerns contained in the interpretation or guideline. A draft of the proposed revisions is being prepared for consideration over the next year.

238-2 VC Standardized Size Descriptions for Shrimp

(This item was adopted as part of the consent calendar.)

Recommendation: Add the following information to the Interpretations and Guidelines in NIST Handbook 130:

2.6.9. Size Descriptors for Raw, Shell-On Shrimp Products

Guideline -- If size descriptor terms for shrimp (e.g., small, medium, large, or colossal) are used on packages, advertisements, or on signs when offering shrimp for sale from bulk, a statement of count-per-kilogram, if sold by kilogram, or count-per-pound, if sold by pound, should be included adjacent to the size descriptor (e.g., medium-large, 31-40 shrimp per pound).

Background: This was Item 232-2 in the 1995 NCWM Interim Meeting Agenda. The National Fisheries Institute, Inc. (NFI), a trade association, requested that the Uniform Method of Sale of Commodities Regulation include requirements that specify standardized size descriptors for shrimp sold from bulk or in package form. The requirement would have applied when a seller included a size claim in connection with advertising shrimp for sale from bulk or in labeling packaged shrimp. The size descriptors suggested by NFI included 14 terms associated with a specific "count-per-pound." The terms used to describe sizes ranged from "extra small" (if more than 90 shrimp weigh a pound) to "super colossal" (when 9 shrimp or fewer weigh a pound). NFI members requested action because many sellers use inconsistent size declarations which can confuse or mislead consumers. The Western Weights and Measures Association and the Committee did not support the NFI recommendation because the proposal included several terms that would not provide meaningful information to consumers.

The Committee believes that the goal of the NFI could be partially achieved if retailers included a "count-per-pound" declaration whenever they use size descriptors in advertisements, on package labels, or in conjunction with bulk sales. The Committee felt that this information may help consumers compare values; consequently, it developed a proposed method of sale requiring a count-per-pound statement along with a size declaration.

When it met in the Fall of 1994, the WWMA opposed adoption of the proposed method of sale because many retailers already provide this information voluntarily, and because enforcement would have consumed inspection resources that

could be better used in net quantity of contents inspections. Instead, the WWMA suggested that a guideline urging retailers and packers to provide the count-per-pound information when size descriptors are presented be incorporated into the Interpretations and Guidelines of HB130. When the Southern Association met in the Fall of 1994, it voted to supported adoption of the original method of sale proposal. The Committee supported the WWMA position on this item and recommends that the guideline proposed above be added to the Interpretations and Guidelines section of HB 130 to encourage packers and retailers to provide the information voluntarily.

239 Price Verification

239-1A VC Examination Procedure for Price Verification

(This item was adopted as part of the consent calendar.)

Recommendation: The Committee finds that the establishment of price verification programs to ensure the price integrity in all retail stores should be a national priority and recommends adoption of the Examination Procedure for Price Verification contained in Appendix E.

Action at the Annual Meeting

The Committee appreciates the comments received on the 5th draft and thanks all of those who participated in its development. If adopted, the procedure will be published in the 1996 edition of NIST Handbook 130.

The Committee recommends that the NCWM adopt the Examination Procedure for Price Verification with a minimum of changes so that the procedure can be implemented in a wide variety of stores and jurisdictions before significant revisions are considered. Therefore, the Committee recommends that weights and measures officials and industry work closely to resolve concerns, violations, and other problems as the procedures are implemented in each jurisdiction. The Committee is amending its Interim Report to address some of the significant issues identified in comments received on the 5th Draft. Minor editorial revisions such as restructuring sentences for clarity and correcting typos and spellings will be completed when the final report is prepared.

1. Page 111, Section 1. Scope, amend the last sentence as follows:

"Nothing in this procedure should be construed or interpreted to redefine any State or local law, or limit any jurisdiction from enforcing any law, ~~or regulation, or procedure~~ that relates to the accuracy of advertisements of retail prices, or any other legal requirement."

2. Page 112, , 2.14, (e) amend the last sentence by deleting the reference to a time limit:

"(e) Intentional Undercharge. -- Undercharges ~~found within 24 hours of the changes are~~ not counted as errors if the store provides, at the time of inspection, information that confirms the price charged was intentional."

3. Page 113, amend 3.2 Confidentiality of Findings as follows:

"Inspection findings should only be discussed with an authorized store representative and only released in accordance with applicable public records laws."

4. Page 114, 6.2. Other - add the words "and legibility" after "the."

5. Page 116, 7.3. Sample Collection Procedures - replace the third note with the following:

"Note: In some stores price reductions are not programmed into the point of sale system. Instead, discounts are manually entered by a sales clerk; however, the sales clerk should have a means to identify

this as a sale item. When conducting normal inspections, you should verify the price of the sale items by allowing the sales clerk to determine the price of the item using the store's customary procedures. This will ensure that the customer receives the correct price regardless of the location where the checkout occurs."

6. Page 126, 11.1. Enforcement Steps - add the following note:

"Note: Many computer systems do not allow for the immediate correction of errors in the database. Downloading information throughout the day may not be possible. Therefore, for the purposes of this section, "immediate" correction of errors may entail the removal or correction of problem signs, manually changing marked prices, or communicating notice of the corrected price to all applicable stores through facsimile, e-mail, or any other appropriate medium which ensures that consumers are charged the correct price."

7. Page 127, 13.2 Follow-up Inspections - delete the last sentence.

Background: The NCWM established the Price Verification Working Group in 1993 to respond to public concern about price accuracy in retail stores. Numerous news stories have accused both retailers and public officials of failing to ensure that "scanned" prices match advertised prices. Consumer advocates and others have requested firmer standards, and many have cited the need for strong sanctions. Some stories cite large numbers of pricing errors, predominantly in favor of the retailer. Most studies and news stories have focussed on scanner errors even though there is evidence that pricing errors occur in stores that use price look-up codes, item pricing, manual key entry, or other methods of entering prices into a cash register. At the Interim Meeting the Food Marketing Institute, the National Retail Federation, and the International Mass Retail Association, trade groups that represent the majority of the retail industry in the United States, expressed support for adoption of the Examination Procedure.

This procedure applies to all retail stores, including food, hardware, general merchandise, drug, automotive supply, convenience, and club or other stores. Model inspection reports have been developed to promote the collection of uniform data. The model reports and uniform procedures will serve as the foundation for the collection and summarization of price accuracy data on a national basis. This information can then be used to provide reliable information on price accuracy with a national perspective. This procedure provides administrators with the tools, guidance, and background information, as well as uniform test procedures and enforcement practices, to enhance the economic well-being of consumers and retail businesses in their jurisdiction. By implementing this program in cooperation with industry, officials will help to restore and maintain consumer confidence in retail pricing practices and technologies, such as scanners, and provide economic benefits for consumers and the business community alike.

Additional Background for Item 239 Price Verification

Meetings and Hearings - In June 1993, the NCWM invited weights and measures and other public officials, retailers, and trade organizations to participate in the Working Group chaired by Barbara J. Bloch, Assistant Director, Division of Measurement Standards, State of California. Members of the Food Marketing Institute, National Retail Hardware Association, the Pennsylvania Food Merchants Association (PFMA), several supermarket companies, and weights and measures officials from several States and Canada attended the first meeting. Based on comments received at the first meeting, the first draft of the "Examination Procedure for Price Verification" (Procedure) was published in September 1993. A second meeting was held in November 1993. Comments on the first draft were discussed and changes incorporated in a second draft published in December 1993. At the Interim Meeting of the 79th NCWM, the Working Group and the Laws and Regulations Committee (Committee) held a public hearing on the second draft. Based on the comments received, a third draft of the Procedure was published in March 1994. Additional public hearings were held at the 79th Annual Meeting and the comments were used to develop a fourth draft. The Committee recommendation included in Appendix E is based on comments received at public hearings at the Interim Meeting for the 80th NCWM in January 1995.

Surveys and Other Information - The Working Group reviewed a wide range of information on this issue, including a 1993 survey of weights and measures jurisdictions from across the country. Also included were academic, government,

and industry studies dating back to 1965, as well as media stories and news articles. The following information represents a few of the issues that are considered most significant to this work:

- At least 20 States are using test procedures to ensure that inspections are uniformly and routinely conducted. Twelve States responded that they had informal test procedures. For States that have procedures, the definition of a "good" inspection result ranges from 90 percent to 100 percent accuracy on sample sizes from 10 to 300 items. Most procedures do not provide guidance for inspectors to "balance" inspections between "sale" and "nonsale" items and commodities offered for sale from bulk, nor do most include items from meat or deli counters where coded prices are generated by scales in the store. Some jurisdictions look at the total monetary value of overcharges on the sample or individual items and consider this in judging what constitutes a good or bad inspection result.
- The type, degree, and timing of enforcement actions or follow-up inspections vary widely. Some States limit their actions to requiring immediate correction of price errors, while others conduct follow-up inspections and take enforcement action based on the level of inaccuracy found on subsequent inspections.
- Several States focus on food stores due to the lack of adequate resources to expand efforts beyond establishments where inspections are conducted for net contents and scale accuracy. This situation exposes food retailers to intense scrutiny and legal action for having price errors, whereas other types of retailers are not held to the same standard. This may indicate a national problem; one State reported an inaccuracy rate of 3.8 percent for supermarkets and an 8 percent to 11 percent error rate in hardware and convenience stores.
- Some officials reported compliance rates of 98 percent to 100 percent, but indicated that inspections are conducted only in response to consumer complaints. Other officials indicated that they had never received complaints about stores that had a history of poor compliance. This is consistent with the experience that weights and measures officials have had in other areas of enforcement.
- Some States reported that they do not perform this type of inspection due to lack of adequate resources and budgets. However, there was overwhelming support for developing an NCWM examination procedure for price verification, and a majority agreed that it should be a priority on the L&R Committee agenda.

Other information:

- Errors in pricing are often the result of human mistakes or oversights. Regardless of cause, pricing errors have a negative effect on consumers and businesses. Stores lose profits on undercharges and consumers lose on overcharges, while inaccurate prices frustrate value comparisons. Incorrect charges are primarily caused by poor pricing practices and ineffective management control, not intentional acts to defraud consumers. However, retailers with poor price integrity have not had strong incentives to improve their pricing practices.
- Some studies indicate that error rates on manually entered prices may be 5 percent to 6 percent or more. Pricing errors may occur on any transaction, so inspection programs must use verification procedures that include manual price entries.
- Media stories continue to point out the failure of some businesses to correct pricing errors promptly. A news broadcast reported that as many as ten purchasers had been overcharged on some products without the prices being corrected after the errors were reported. This has led a few regulatory agencies to impose stringent enforcement action when the same errors are found on a follow-up visit.
- Results from one study tested the assumption that prices are more likely to be correct several days into a sale because the store would have had ample opportunity to identify and correct the errors. Results indicate that the day of purchase has little impact on errors. This indicates that stores involved in this study have no validation or correction procedures once prices are supposedly changed.
- Failure to use random sampling techniques, nonuniform test procedures, and/or small sample sizes may result in misleading information regarding the overall accuracy of prices in retail stores. For example; it is misleading to say that a store with 40,000 items overcharges on 4,000 items if the statement was based on a 10 percent error found in a sample of 10 sale priced items.

- Accuracy tests conducted in jurisdictions that require item pricing have indicated errors ranging from 4 percent to 7 percent.

Accuracy

A. General - This Procedure does not set a "tolerance" since laws require prices to be accurate. This procedure should not be construed or interpreted to prohibit any jurisdiction from enforcing any law or regulation. The "accuracy" guidelines in this procedure are based on the same logic that governs other weights and measures enforcement practices (i.e., errors are minimized so that the permitted number of errors is sufficiently small that there is no serious injury to either the buyer or seller, yet not so small as to make compliance or enforcement costs disproportionately high). Retail stores can meet or exceed the 98 percent accuracy guideline using available technology and the "good pricing practices" currently used in many stores. This procedure recognizes that enforcement agencies have limited resources with which to conduct price verification inspections. Indeed, it is unlikely that any jurisdiction has the resources to devote the amount of time necessary to conduct frequent inspections in all of the stores under its coverage, let alone the staff time it would require to achieve a 99 percent or 100 percent level of compliance in just a few hundred stores. The 98 percent accuracy guideline allows jurisdictions to focus attention on serious violations (e.g., the thousands of stores that may have accuracies of 75% to 95%).

B. Other Comments - No assumptions can be made about the accuracy of price in any type of retail store. Stores must be considered on a case-by-case basis because price accuracy in each store depends on management and employees effectively implementing good pricing policies, practices, and procedures. The evaluation of the "accuracy" of prices must be based on the verification of all pricing methods used in the store, not just the "scanner" prices. Stores that use "scanners" also use price-look-up codes and manually enter prices to charge for some items. Many pricing errors result from inaccurate entries of price-look-up codes or mistakes in identifying products. This document includes procedures for use in a wide variety of stores and utilizes a combination of "randomized" and/or "stratified" sample selection. This ensures that the test results provide an overall picture of a store's pricing practices. As stated, price accuracy depends on the control and procedures in each store. Therefore, a single chain store "failing" an inspection does not mean all stores in the chain fail. This reinforces the need for routine inspections to ensure that control of price accuracy is maintained on a continuous basis and ensure that subsequent changes in store personnel and practices do not have a detrimental impact on price accuracy.

239-1B VC Amend the Uniform Weights and Measures Law to Include Authority to Conduct Price Verification Inspections

(This item was adopted as part of the consent calendar.)

Recommendation: Add a new requirement to Section 12 to give the Weights and Measures Director authority to adopt uniform test procedures to verify advertised prices, test "point-of-sale" devices, and conduct inspections.

Section 12. Powers and Duties of the Director - The Director shall:

(q) Verify advertised prices, price representations, and point-of-sale systems, as deemed necessary, to determine: (a) the accuracy of prices and computations and the correct use of the equipment, and (b) if such system utilizes scanning or coding means in lieu of manual entry, the accuracy of prices printed or recalled from a database. In carrying out the provisions of this section, the director shall: (1) employ recognized procedures, such as are designated in National Institute of Standards and Technology Handbook 130, "Price Verification," (2) issue necessary rules and regulations regarding the accuracy of advertised prices and automated systems for retail price charging (referred to as "point-of-sale systems") for the enforcement of this section which shall have the force and effect of law, and (3) conduct investigations to ensure compliance.

Background: Several jurisdictions expressed concern that the scope and requirements of their laws would not permit them to conduct a price verification inspection on any product sold by other than weight or measure. Another concern is the need for specific authority to conduct inspections of prices if a store's point-of-sale system is not attached to a scale or measuring device. The Committee recommends amending the WML to ensure that State and local weights and measures

programs have the authority to conduct price verification inspection in all types of retail stores on a routine basis according to uniform standards and procedures.

NIST has historically taken the position that weights and measures enforcement activities should be funded from general tax revenues. However, some State and local governments require the operations of their weights and measures programs to be funded from a variety of other sources (e.g., business or device registration fees, or inspection service charges). Implementation of a price verification program may impose additional costs and require some jurisdictions to review funding so that the costs of such inspections are recovered in accordance with local policies.

239-1C W Amend the Uniform Weights and Measures Law to Require Customer Indications on Point-of-Sale Systems

(This item was withdrawn.)

Recommendation: Add a new Section 22 (current Sections will be renumbered accordingly) to the Uniform Weights and Measures Law to require the price display on "point-of-sale" devices to be visible to consumers when prices are being totaled. The proposed section includes a nonretroactive provision for existing equipment.

Section 22. Customer Indications on Point-of-Sale Systems

A point-of-sale system, or other device for totaling the monetary value of consumer purchases installed after January 1, 19__, shall be positioned so that its indications may be accurately read from a "reasonable" customer position.

Recommendation: Add the following definition to Section 1. Definitions. --

Definition:

Point-of-sale system. - A point-of-sale system includes cash register(s), or device(s) and system(s) capable of recovering stored information related to the price of individual retail items.

Background: Comments submitted to the Committee described widespread instances where consumers were unable to see the price of items being rung-up on cash registers and point-of-sale systems. Most of these devices were not attached to a scale; therefore, they do not fall under the jurisdiction of NIST Handbook 44, General Code, User Requirement, 3.3 Position of Equipment, which reads: "A device equipped with a primary indication element and used in direct sales shall be so positioned that its indications may be accurately read and the weighing and measuring operation may be observed from some 'reasonable' customer position." Consumers deserve access to the cash register display of product information and price in retail stores. The need for consumers to view the price of items as they are rung-up cannot be overstated. If consumers cannot verify prices as the items are being scanned or rung-up, they must wait until the transaction is completed (e.g., they must pay by cash or check) before they receive the receipt and can confirm the prices charged for the items. The Committee received several comments recommending that the NCWM consider a revision to the uniform weights and measures law to require that cash registers displays be positioned so that they can be read from some reasonable customer position. The above recommendation is consistent with the existing provision in NIST Handbook 44 that has been effectively enforced for decades in tens of thousands of retail stores and is based on a requirement in the Massachusetts Weights and Measures Law that has proven effective in ensuring that consumers can see the prices charged as they are totaled.

250

NIST Handbook 133

250-1

I Status of NIST Handbook 133

The Committee is amending its Interim Report to address the issues raised during the presentation made by the Grocery Manufacturers of America (GMA) during the public hearing. The Committee appreciates GMA's candor in notifying the NCWM that representatives of its "Food Industry Weights and Measures Task Force" met last week with Food and Drug Administration (FDA) officials to discuss GMA's recommendation that FDA incorporate what GMA calls "Preprosecution Enforcement Procedures" in its proposed rules to adopt NIST Handbook 133.

Since adopting the 4th supplement to NIST Handbook 133 at the 1994 Annual Meeting, the NCWM has made tremendous strides in achieving national uniformity among the States in package checking procedures. Since then, USDA has adopted the 4th supplement, and the NCWM, NIST, and the State of Maryland have sponsored a very successful Instructor Training School that will result in more than 700 weights and measures officials being trained in the new Category A test procedures by the end of the year. Clearly, the NCWM has taken the leadership role in implementing net content procedures that ensure consumer protection while maintaining fair competition in the marketplace. The Committee is concerned that incorporating the GMA proposal into FDA's final regulations would require officials to request "production records" on every lot found to be short weight or short measure before any enforcement action could be taken. If the "production records" are provided, and if they indicate that the "production lot" failed, the official could then take action.

The Committee recommends that the NCWM immediately go on record with FDA as strongly opposing the GMA proposal because it would place a tremendous burden on enforcement officials and may, in effect, eliminate most net content inspections of FDA-regulated foods. The Committee urges the NCWM to support FDA's proposal if the GMA recommendations are not included. If the GMA proposal is included, the Committee recommends that NCWM strongly oppose any provisions that implement the GMA recommendations. The Committee urges all industry members of the NCWM to review the GMA proposal to consider its impact on the marketplace. The Committee believes that retailers and wholesalers may be affected adversely when product lots are placed on hold pending receipt of production records from the packer. Retailers and wholesalers might be placed in the position of having to obtain records from manufacturers to get lots released. The Committee believes that the GMA proposal would also create a serious problem for many industries which may be inundated with requests for production records that may not even exist because many packers do not maintain adequate production records on a lot-by-lot basis. The Committee believes that the GMA proposal is shortsighted, ill conceived, and unnecessary because the NCWM already encourages jurisdictions to check products as far up the chain of distribution as possible. If adopted, the GMA proposal would create a situation where meat and poultry products and non-FDA regulated goods would be treated differently and might have similar implications for imported products.

The Committee urges GMA to reconsider its proposal and withdraw its request to FDA immediately. The agency could then issue a proposal free of provisions limiting an enforcement official's actions beyond establishing a national standard that ensures that identical procedures be applied to all food products. The Committee believes that this was the intent of the Nutrition Labeling and Education Act. The Committee also urges GMA to continue to work with the NIST Handbook 133 Working Group and develop proposals that would facilitate point-of-pack inspections, define "good manufacturing practices," and help ensure that "due process" procedures are followed.

Background: This was Item 240-2 in the Report of the 78th NCWM, 1993, (page 236) and Item 250-1 in the Report of the 79th NCWM, 1994 (page 222). In the NCWM's petition to the Food and Drug Administration (FDA) on November 9, 1992, States requested an exemption from preemption under Section 403 A(b) of the Federal Food, Drug, and Cosmetic Act to permit continued use of NIST Handbook 133, "Checking the Net Contents of Packaged Goods," for testing foods for the accuracy of their quantity declarations. Extensive revisions were made to the handbook at the 79th NCWM Annual Meeting, and were published in November 1994 in a 4th supplement to the handbook. The Office of Weights and Measures has provided several successful training classes on the 4th supplement since its adoption, and its acceptance and implementation are already underway in many States. As of the 1995 Interim Meeting, FDA had not responded to the NCWM proposal nor published proposed regulations concerning the adoption of NIST Handbook 133. The Committee decided to contact FDA to express concern over the status of NIST Handbook 133 and to urge the Agency to move

forward with its anticipated proposal to adopt NIST Handbook 133. If the FDA publishes proposed regulations prior to the Interim Meeting in 1996, a presentation will be made on the proposal during the public sessions.

250-2 I Moisture Loss for Pasta

Background: See Item 240-5 in the Report of the 75th NCWM, 1990 (page 107); Item 240-4 in the Report of the 76th NCWM, 1991 (page 219); Item 240-4 in the Report of the 77th NCWM, 1992 (page 154); Item 240-3 in the Report of the 78th NCWM, 1993 (page 237); and Item 250-2 in the Report of the 79th NCWM, 1994, (page 225) for background. A field study protocol has been developed by the National Pasta Association (NPA) for nationwide study to determine the moisture losses on various pasta products in different packaging materials. The study will be used to develop a gray area proposal for pasta products which lose moisture to the atmosphere. The Committee will continue to work with the Association on this issue over the next year.

250-3 I Moisture Loss for Rice

Background: This was Item 240-7 in the Report of the 76th NCWM, 1991, (pages 221-222); Item 240-5 in the Report of the 77th NCWM, 1992 (page 154); and Item 250-3 in the Report of the 79th NCWM, 1994 (page 225). The U.S.A. Rice Federation (Federation) (formerly known as the Rice Millers Association) has requested that the Conference address the moisture loss of packaged rice in a manner similar to that used for flour, namely, to establish a gray area for packaged rice. A field study protocol has been developed by the Federation for a nationwide study to determine the moisture losses of various rices in different packaging materials. The Committee will continue to work with the Federation on this issue over the next year.

250-4 I Moisture Loss for Bar Soap

The Committee will ask the NIST Handbook 133 Working Group to update Section 2.5.6." Guidelines for NCWM Resolution of Requests for Recognition of Moisture Loss in Other Packaged Products" when the group resumes its work following FDA publication of its proposal.

Background: At the Interim Meeting, representatives of the Dial Corporation (Dial) presented extensive moisture loss studies on Tone Complexion Soap ("Tone") that the firm has conducted for more than 10 years. The studies were presented in support of a request to NCWM for establishment of a gray area for bar soap. The Committee found the Dial studies extensively detailed and supported with well-documented statistical data and other materials which confirm that "Tone" losses up to 10 percent of its weight due to moisture loss over its typical shelf life. The proposal also included a September 26, 1984, letter regarding moisture allowances on bar soap from the Food and Drug Administration (FDA) to a weights and measures jurisdiction indicating that FDA "would not consider a moisture loss as high as 10 percent or greater ... to be unreasonable." The FDA guidance is consistent with the findings of a weight loss study on bar soap conducted by the NIST Office of Weights and Measures in the 1970's which found that some soap bars in the study lost up to 15 percent of their weight due to moisture loss though, on the average, the soap bars lost about 7 percent.

The Committee reviewed Dial's proposal and decided that the moisture loss data in the proposal, though well-documented in nationwide studies, can only be used with "Tone" and no other brand or type of soap bar. Therefore the Committee decided not to recommend adoption of a gray area for a single brand of soap. The gray areas adopted for flour and dry pet food, for example, were based on studies conducted on a wide range of products from several manufacturers and apply to all brands and types of flour and dry pet food products, not to individual brands.

Recommendation: Because moisture loss information for a wide range of packaged goods, determined using scientific methods that are statistically sound, is not readily available, weights and measures administrators are often unable to provide guidance on moisture allowances to their field personnel. When an inspector takes enforcement action (e.g., issues a stop-sale or citation) against any underweight product that is subject to moisture loss, there is no question that the inspector is required by law to recognize reasonable variations caused by moisture loss. If reasonable moisture loss is not recognized, the weights and measures agency is exposed to legal action for failing to provide the owner of the product due process under the law.

The Committee believes that weights and measures administrators and field officials should be provided with as much information and guidance as possible to help in making enforcement decisions involving products subject to moisture loss so that jurisdictions can continue to enforce net weight requirements on all types of products. As a step towards this goal, the Committee is presenting the moisture loss data for Dial's "Tone Complexion Soap" so that it can be used when the net weight of this brand of soap bar is verified. Dial's data was developed by collecting hundreds of bars from retail locations around the country and testing them in a laboratory to develop moisture loss curves that were then verified through additional retail sampling. According to both Dial and several weights and measures officials, these studies have been accepted and used by several jurisdictions around the country to recognize moisture loss issues. The approach used by Dial to develop this information on "Tone Complexion Soap" can serve as a model approach that could be used by any soap manufacturer to develop moisture loss data for other bar soaps.

The Committee recommends that weights and measures administrators and officials use the procedures described below to determine whether lots of "Tone Complexion Soap" that average less than the labeled net weight may be underweight due to reasonable moisture loss. The Committee will continue to work with Dial to ensure that the data is routinely reverified and updated to ensure that it reflects any changes that may occur in the formulation of the bar soap, changes in packaging material, or significant shifts in distribution or handling practices.

How to use the Moisture Loss Data for "Tone Cosmetic Soap"

The following guidance applies to "Tone" products manufactured by the Dial Corporation. This information includes guidance in how to read product code dates, which allows you to determine the production date of the "Tone" soap bars being inspected so that reasonable moisture loss can be determined in increments of 10 days beginning from time of pack up to 450 days of shelf life. This approach is different from the gray area approach for other products because it limits the moisture allowance to an amount determined by data linked to the length of time the product has been exposed to various environments during shipping, handling, and retail display.

How the Tables are Used to Determine Moisture Loss

The following example will illustrate how to use the look up tables. While conducting a package inspection on March 12, 1994, in a retail drug store, you find a lot of Tone Complexion Soap, labeled with a net weight of 99 g (3.5 oz), underweight with an average negative error of 4.5 grams. You determine that the code date stamped on the packaging is "J123A1."

Step 1. Determine when the product was manufactured by interpreting the code date J123A1 using Table 1 below.

According to the code date "J123A1," the soap bars in this example were made on October 12, 1993, and are 150 days old on March 12, 1994.

Step 2. From Table 2 look up the average predicted moisture loss that can be expected to occur "Tone Complexion Soap" within 150 days of manufacture.

Table 1. Code Date Information for Tone Complexion Soap

Determine the Date of Manufacture from Code Date:

- The first four characters in the Code Date stamped on the end flap of the package identify the date the product was packaged (the additional characters are used to identify the plant, shift, and production line).
- The first character, a letter, designates the month.

A = Jan	E = May	I = Sep
B = Feb	F = Jun	J = Oct
C = Mar	G = Jul	K = Nov
D = Apr	H = Aug	L = Dec

- The second and third characters are numbers, which designate the day of the month:

02 = 2nd 16 = 16th 23 = 23rd

- The fourth character designates the year of the decade: 1 = 1991 2 = 1992 3 = 1993

Table 2. Moisture Loss Data for Tone Complexion Soap

Days from Mfg	Moisture Loss %	Days from Mfg	Moisture Loss %	Days from Mfg	Moisture Loss %
10	3	160	6.62	310	7.49
20	3.91	170	6.7	320	7.53
30	4.44	180	6.78	330	7.57
40	4.81	190	6.85	340	7.61
50	5.1	200	6.91	350	7.64
60	5.34	210	6.98	360	7.68
70	5.54	220	7.04	370	7.72
80	5.72	230	7.1	380	7.75
90	5.87	240	7.15	390	7.79
100	6.01	250	7.2	400	7.82
110	6.13	260	7.26	410	7.85
120	6.25	270	7.31	420	7.88
130	6.35	280	7.35	430	7.91
140	6.45	290	7.4	440	7.94
150	6.54	300	7.44	450	7.97

According to Table 2, soap bars 150 days old have had an average moisture loss of 6.54 percent.

Step 3. To convert this percentage to weight multiply the moisture loss in percent from Table 2. times the labeled quantity. The computed value represents the value of the weight loss that can occur due to moisture loss.

For example: $6.54\% \times 99\text{ g} = 6.47\text{ g}$

Step 4. Compare the average error to the value computed in Step 3. If the average error is larger than the value computed in Step 3, the lot fails. If the average error is less, the lot passes.

For example: The average error for this lot was 4.5 g, which is less than the moisture loss value of 6.47 g, so the lot passes. For moisture loss information on this, or other soap products manufactured by Dial Corporation contact: Ann E. Cote, Quality Process Improvement, Dial Corporation, 2000 Aucutt Road, Montgomery, Illinois 60538, or by telephone on 708-801-4686 or fax on 708-892-5635.

250-5**I Moisture Loss for Meat and Poultry Products**

The Committee will solicit comments on this item at the Interim Meetings in January 1996 to determine if there is sufficient justification, support, and resources to develop gray areas for these products.

Background: See Item 240-7 on page 239 in the Report of the 78th NCWM for background on this issue. The NIST Handbook 133 Working Group will develop a workplan to implement studies on one or more of the following commodity groups at its next meeting, which is tentatively scheduled for June 1995. Parties interested in participating in these studies should contact one of the Committee's Technical Advisors at the Office of Weights and Measures.

1. Ice-packed bulk poultry
2. Raw meat products (chopped beef, ground beef, hamburger, and beef patties)
3. Cured pork products (hams, shoulders, and loins)
4. Cured beef products (corned beef, corned beef brisket, and tongues)
5. Ham patties, chopped ham, pressed ham, and similar products
6. Dry salami and other meat or poultry products that lose moisture to the atmosphere

250-6**W Liquefied Petroleum Gas (LPG) Packaged in 20-lb Cylinders**

(This item was withdrawn.)

Background: The Office of Weights and Measures (OWM) was contacted by representatives of the Southern Weights and Measures Association and county jurisdictions in Indiana and Pennsylvania concerning the weighing practices and tare procedures used to fill 20-lb cylinders of LPG for home use, such as barbecue grills, heating units, and for some recreational vehicles. In some cases, after finding underweight cylinders offered for sale at several locations, inspectors have been told that some shortweighing is a direct result of safety regulations that limit the amount of LPG that can be put into a cylinder.

At the Interim Meeting the Committee reviewed inspection findings from Wisconsin, New Jersey, California, Indiana, and the Legal Metrology Branch (LMB) of Industry Canada. The summary of inspections revealed that 20-lb cylinders of LPG had been found underweight on a significant number of inspections. The shortages appear to be caused primarily by improper weighing procedures (e.g., leaving the fill nozzle attached during the final weighing process), inaccurate tare weights, and scale inaccuracies. There was no clear indication in the material received that cylinders are being underfilled for safety reasons; however, the Committee position is that if cylinders are filled to less than 20-lb for safety reasons, then the declared net weight on cylinder labels, signs, or other advertisements, must be based on the actual net weight. The Committee encourages weights and measures jurisdictions to conduct net quantity inspections on 20-lb cylinders of LPG. The National Propane Gas Association has volunteered to help with an industry education program to help eliminate weighing errors like the ones mentioned above. Based on its review of this item, the Committee agreed that no changes are needed in existing laws or test procedures, so this item is being withdrawn.

250-7**W Maximum Allowable Variations for Kitchenware Labeled by Capacity or with Dimensions**

(This item was withdrawn.)

The Committee withdrew this item at the request of the Northeastern Weights and Measures Association, the Cookware Manufacturers Association, and General Mills Inc.

Recommendation: Add the following subsection to § 2.13. Exceptions to the MAV's in NIST Handbook 133:

2.13.5. Kitchenware

Whenever the dimensions or capacity of kitchenware such as cookware, bakeware, household dry measures, and similar items are declared on or for a product, the following maximum allowable variations shall apply:

- (a) minus 6 millimeters (1/4 in) for items labeled by dimensions.
- (b) minus 5 percent of the stated capacity for items labeled by capacity.

Background: The NIST Handbook 133 Working Group received a request to amend the handbook so that the maximum allowable variations (MAV's) for packages labeled in terms of volume would be applied to cookware, bakeware, or any other item that is labeled in terms of volume. The Working Group did not support the proposal because the MAV's in the handbook are based on variations in the volume of fill of packages of liquid commodities, not on studies of the variations in the capacity of products such as cookware labeled in terms of volume.

Kitchenware, usually labeled by capacity or dimensions, includes household dry measures, mixing bowls, pots, cooking pots and pans, bakeware, disposable cups and bowls, beverage containers, storage containers, buckets, utility pans and tubs, drink dispensers, canteens, ice chests, etc. Many of these items (with the exception of the dry measures) may be purchased just for their ability to hold a commodity, although not necessarily any specific amount of that commodity.

Most cookware, bakeware, and other items are manufactured by casting, molding, or pressing materials using equipment or manufacturing processes developed to meet voluntary industry standards. The Cookware Manufacturers Association (CMA) and the American National Standards Institute (ANSI) have adopted a voluntary standard that allows a \pm 5 percent tolerance for capacity (\pm 1/4 inch [6 mm] for dimensional measurements) on cookware, bakeware, and measuring cups and spoons. In the past, several State officials contacted OWM for guidance in responding to consumer complaints about the accuracy of crockpots, cookware, and bakeware. OWM advised officials to permit the allowable difference specified in the CMA/ANSI standards when determining if these products comply. Consequently, OWM recommended that the Committee consider adding a section to NIST Handbook 130 or Handbook 133, as appropriate, which would establish an allowable difference of plus or minus 6 millimeters (1/4 in) for items labeled by dimensions and an allowable difference of plus or minus 5 percent of the stated capacity for items labeled by capacity. The proposal for an "allowable difference" was supported by CMA and General Mills, Inc.

Prior to and during the Interim Meeting several weights and measures officials opposed the adoption of an "allowable difference" for kitchenware because they are concerned that it will be used as a tolerance for these consumer products. Instead, these officials recommended adoption of a "maximum allowable variation" to be applied in conjunction with the "average requirement" in Handbook 133. The Committee agreed with the comments and modified the proposal to make it clear that the proposed value would be a MAV, not an "allowable difference." The proposal was also amended to make it clear that the MAV would apply only to kitchenware, not to commercial measuring equipment.

250-8 I Count Declarations on Agricultural Seed

At the Annual Meeting, the Committee received an update on this activity from the American Seed Trade Association (ASTA) and Pioneer Hi-Bred International, Inc. (Pioneer) during the public hearing and will continue to urge the NIST Handbook 133 Working Group to work with industry, trade associations, and other interested parties to develop a proposal for consideration by the NCWM at an appropriate time.

Recommendation: The Committee decided to coordinate a study to determine if the values contained in HB 133, Table 2-7. Maximum Allowable Variations for Packages Labeled by Count, are appropriate for agricultural seed labeled by count. The Committee is referring this item to the Handbook 133 Working Group so that this work can be coordinated with the seed and farming industry and members of the Society of Commercial Seed Technologists (SCST), Association of American Seed Control Officials (AASCO), and the Association of Official Seed Analysts (AOSA).

The Office of Weights and Measures will contact the ASTA, SCST, AASCO, AOSA, and other interested parties to determine if a working group can be formed in the near future to: (1) define the scope of and develop a workplan for this project; (2) identify individuals (e.g., packers, farmers, and seed control and weights and measures officials) who are willing to participate in this work; (3) evaluate the appropriateness of current test methods for verifying count to determine their utility; and (4) determine the environmental and other factors that must be recognized as influencing the test results.

Background: At the Interim Meeting, the Committee received information regarding the declaration of count on packages of agricultural seed from several representatives of the seed industry, the ASTA, and several State weights and measures officials. The issue is whether the values contained in Table 2-7, Maximum Allowable Variations (MAV's) for Packages Labeled by Count, are appropriate to apply to packages of agricultural seed labeled by count.

A representative of Pioneer gave a presentation concerning the difficulty that several seed companies had encountered with their count declarations when State Weights and Measures Officials applied the values in Table 2-7 in NIST HB133 to the actual count found in bags of corn and soybean seed. These bags are often labeled with count declarations up to 120,000. Pioneer produces, markets, and sells hybrid corn, sorghum, sunflower, soybeans, wheat, alfalfa, and canola seed. In 1994 the Illinois Agriculture Department launched a study to determine if, under the present set of regulations, the seed industry is labeling accurately, and if the seed industry can indeed meet the MAV's in Table 2-7. The practice of labeling the number of seeds per pound on these crops began as a service to assist farmers in achieving optimum planting levels and is not the unit of measure for selling the product. Seed corn and sunflower seed are the major types of seed labeled by count.

Pioneer stated that the MAV of 1.5 percent for individual packages declared to contain more than 1,334 seeds may not be appropriate for agricultural seed. Pioneer based this position on the fact that seed is a biological product that is substantially affected by uncontrollable environmental conditions. Examples of environmental factors that cause seed size variability are growing season length, heat unit accumulation, rainfall, soil type, fertility and individual variety response to stress conditions. In reviewing the background material on how the current MAV values were established, industry believes that the values are only appropriate for packages of manufactured products that can be better controlled for size, density, and weight through a manufacturing process.

Packages Labeled with Total Seed Count

Pioneer and other packers now label and sell seed corn and sunflower seed primarily by seed count. However, they also include net weight on the label. Seed corn and sunflower seed are graded for size so that farm equipment can plant a specific number of seed per acre to maximize yield potential. The company sells corn by weight in packages labeled as containing either 60,000 kernels, 80,000 kernels or 120,000 kernels, and sunflower seed in packages labeled either 100,000 or 200,000 seeds per package.

Packages are also Labeled with Seed Count Per Pound

Soybean, wheat, and sorghum are typically sold in 50-pound packages. The count for soybeans ranges from 90,000 to 200,000 seeds per 50-pound package. The varieties and growing conditions determine the count. Wheat ranges from 475,000 to 900,000 seeds per 50-pound package. Sorghum seed has a range of 425,000 to 825,000 seeds per 50-pound package. Packages of these seeds are also labeled with the number of "seeds per pound." Firms like Pioneer include seed count as a service to customers to assist with planting accuracy. These three crops do not require the planting and population accuracy that corn and sunflowers require; consequently, the seed is not graded for size. This should not suggest that seed count (thus plant population per acre) is not important, just that it is not as critical for those crops.

Summary: Pioneer believes that labeling by seed count may not realistically be enforceable under the present guidelines for non-sized agricultural seeds. For seeds graded for size, industry may be able to meet the current MAV, however no data is available either to prove or disprove this. Pioneer is undertaking a statistically designed study of corn and soybeans to determine what levels of labeling accuracy are achievable. Upon completing the corn and soybean study, they will test sunflower, wheat, and sorghum and share the results with the Committee for evaluation. Pioneer also requested that the Committee review the procedures used by seed control officials and industry for sampling, testing, and enforcement to see if they are consistent with HB 133 because other States may implement programs to verify seed count.

S. Rhoades, Arizona, Chairman

K. Angell, West Virginia

R. Gunja, Kansas City, Kansas

S. Millay, Maine

L. Straub, Maryland

HB-133 and Price Verification Working Groups: B. Bloch, California, Chairman

Petroleum Subcommittee: E. Hamilton, Florida, Chairman

R. Jennings, Tennessee, Technical Advisor

Technical Advisors:

K. Butcher, NIST G. Jorowski, Industry and Science Canada

T. Coleman, NIST G. Vinet, Legal Metrology Canada

J. Koenig, NIST

Committee on Laws and Regulations

**Appendix A
Draft of a Revised
Uniform Regulation for National Type
Evaluation**

1. Background

The Uniform Regulation for National Type Evaluation is a necessary adjunct to recognize and enable participation in the National Type Evaluation Program administered by the National Institute of Standards and Technology. The Regulation specifically authorizes: type evaluation; recognition of a National Institute of Standards and Technology "Certificate of Conformance" of type; the State Measurement Laboratory to operate as a Participating Laboratory, if authorized by the National Institute of Standards and Technology under its program of accreditation of State Measurement Laboratories; and the State to charge fees to those persons who seek type evaluation of weighing and measuring devices.

2. Intent

The intent of this regulation is to encourage all States to use the National Type Evaluation Program, as approved by the National Conference on Weights and Measures, as their examining procedure.

3. Status of Promulgation

The table beginning on page 5 (in Handbook 130) shows the status of adoption of the Uniform Regulation for National Type Evaluation.

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Appendix A. Uniform Regulation for National Type Evaluation

Section 1. Application

This regulation shall apply to all classes of devices and/or equipment covered in National Institute of Standards and Technology Handbook 44.

Section 2. Definitions

2.1. Certificate of Conformance. -- A National Type Evaluation Program Certificate of Conformance issued by the Chief of the Office of Weights and Measures of the National Institute of Standards and Technology establishing that the commercial weighing and measuring device, based on testing, meets the requirements of National Institute of Standards and Technology Handbook 44;

2.2. Director. -- means the _____ of the department of _____.

2.3. National Type Evaluation Program.
-- A program of cooperation between the National Institute of Standards and Technology, the National Conference on Weights and Measures, the States, and the private sector for determining, on a uniform basis, conformance of a type with the relevant provisions of National Institute of Standards and Technology Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices.

2.4. One-of-a-Kind Device. -- A device manufactured for sale that has been categorized and tested as a "one-of-a-kind" device. If the manufacturer constructs an additional device or devices, the device is no longer considered to be "one-of-a-kind." This definition also applies to any device that has been determined to be a "one-of-a-kind" device by a weights and measures jurisdiction in one state and the manufacturer decides to manufacture and install the device in another state. In this case, the manufacturer must request an NTEP evaluation on the device through the normal application process, unless NTEP has already decided that such evaluation will not be conducted.

2.5. Participating Laboratory. -- Any State Measurement Laboratory that has been accredited by the National Institute of Standards and Technology, in accordance with its program for the Certification of Capability of State Measurement Laboratories, to

conduct a type evaluation under the National Type Evaluation Program.

2.6. Remanufactured Devices. -- Devices to which an overhaul or replacement of parts has been performed so the device can be installed in a new location.

2.7. Repaired Devices. -- The maintenance or replacement of parts for devices to remain or return to service in the same location.

2.8. Type. -- A model or models of a particular measurement system, instrument, or element that positively identifies the design. A specific type may vary in its measurement ranges, size, performance, and operating characteristics as specified in the Certificate of Conformance.

2.9. Type Evaluation. -- The testing, examination, and/or evaluation of a type by a Participating Laboratory under the National Type Evaluation Program.

2.10. Commercial and Law Enforcement Equipment. -- (a) Weighing and measuring equipment commercially used or employed in establishing the size, quantity, extent, area, or measurement of quantities, things, produce, or articles for distribution or consumption, purchased, offered, or submitted for sale, hire, or award, or in computing any basic charge or payment for services rendered on the basis of weight or measure. (b) Any accessory attached to or used in connection with a commercial weighing or measuring device when such accessory is so designed that its operation affects the accuracy of the device. (c) Weighing and measuring equipment in official use for the enforcement of law or for the collection of statistical information by government agencies.^{NOTE 1, see page 114}

Section 3. Certificate of Conformance

The Director shall require Commercial or Law Enforcement Equipment to be covered by an NTEP Certificate of Conformance prior to its installation or use for commercial or law enforcement purposes.

Note 1: The section is identical to G.A.1., § 1.10, General Code, National Institute of Standards and Technology Handbook 44 for definition of "commercial" and "law enforcement equipment."

Section 4. Certificate of Conformance; Specific Requirements.

(1) No person shall sell a commercial weighing or measuring device unless a Certificate of Conformance has been issued for the device, except when the device is exempted by this section.

(2) No person shall use a commercial weighing or measuring device unless a Certificate of Conformance has been issued for the device prior to use, except when the device is exempted by subsection (3), (4), or (5) of this section.

(3) Commercial weighing or measuring devices in service prior to _____, 19_____, which meet the specifications, tolerances, and other technical requirements of National Institute of Standards and Technology Handbook 44 shall be exempt from meeting the requirements for the Certificate of Conformance.

(4) Commercial weighing or measuring devices in service prior to _____, 19_____, removed from service by the owner or on which the department has issued a removal order after _____, 19_____, and returned to service at a later date shall be modified to meet all specifications, tolerances, and other technical requirements of National Institute of Standards and Technology Handbook 44 as adopted by the Legislature, on the date of the return to service. Such commercial weighing and measuring devices shall not be required to have a Certificate of Conformance.

(5) Commercial weighing or measuring devices in service prior to _____, 19_____, which are remanufactured, modified, or upgraded after such date shall meet all specifications, tolerances, and other technical requirements of National Institute of Standards and Technology Handbook 44 adopted by the Legislature on the date of the modification or upgrading. Such commercial weighing and measuring devices shall not be required to have a Certificate of Conformance.

(6) Devices in service prior to _____, 19_____, that are still in use and are no longer being manufactured may be sold to another jurisdiction, provided that the device meets current requirements as of the date of

installation in the new jurisdiction; however, no NTEP Certificate of Conformance is required.

(7) One-of-a-kind Devices

"One-of-a-kind Devices" do not require an NTEP Certificate of Conformance. However, if the manufacturer decides to make an additional device or devices, the device will no longer be considered to be "one-of-a-kind" and an NTEP evaluation must be conducted on the device. For scales, load cells and electronic indicators must have an NTEP Certificate of Conformance.

(8) Repaired Devices

a. If a company or individual makes changes to a device to the extent that the metrological characteristics are changed, that specific device is no longer covered by the NTEP Certificate of Conformance.

(9) Remanufactured Devices

b. If a company or individual repairs or remanufactures a device, they are obligated to repair or remanufacture it consistent with the manufacturer's original design; otherwise, that specific device is no longer covered by the NTEP CC.

(10) Copies of Devices

If a company copies the design of a device made by another company that has a Certificate of Conformance for the device, the Certificate of Conformance does not apply to the model that is a copy. The company that copied the device must get its own type evaluation on the device.

(11) Scale or Weighing System Components

If a person buys NTEP load cells and an NTEP indicating element and then manufactures a scale or weighing system from the parts, the complete device must be submitted for type evaluation.

Section 5. Participating Laboratory and Agreements

The Director is authorized to:

(1) Operate a Participating Laboratory as part of the National Type Evaluation Program. In this regard, the Director is authorized to charge and collect fees for type evaluation services.

- (2) Cooperate with and enter into agreements with any person in order to carry out the purposes of the act.

Section 6. Unlawful Acts

It shall be unlawful for any person to:

- (1) Use any commercial weighing and measuring device in a commercial application unless a Certificate of Conformance has been issued for such device unless exempt in Section 4.

- (2) Sell any weighing and measuring device for use in a commercial application unless a Certificate of Conformance has been issued for such devices unless exempt in Section 4.

Section 7. Revocation of Conflicting Regulations

All provisions of all orders and regulations heretofore issued on this same subject that are contrary to or inconsistent with the provisions of this regulation, and specifically _____, are hereby revoked.

Section 8. Effective Date

This regulation shall become effective on _____.

Appendix B Report of the Petroleum Subcommittee to the Laws and Regulations Committee

Eric Hamilton, Chairman
Chief, Bureau of Petroleum Inspection
Florida Department of Agriculture and Consumer Services

Summary

The Subcommittee met on January 11, 1995, at the NCWM Interim Meeting in Costa Mesa, CA, to review the current state of proposed documents and to discuss other issues it had been assigned to address.

This report contains recommendations to the Laws and Regulations Committee as a result of discussions and material presented at the Subcommittee meeting. Additionally, the need for surveys to be developed and distributed to the States in order to capture information necessary to determine priorities for future Subcommittee activities is discussed.

The following items were addressed at the Subcommittee meeting:

1. Petroleum Products Sampling Procedures and Safety Manual
2. Specification for Premium Diesel
3. Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Inspection Law
4. Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Inspection Regulation/Need for Survey
5. Future Activities Survey

These items are covered below along with the Subcommittee's recommendations to the Committee.

Petroleum Products Sampling Procedures and Safety Manual

The Subcommittee felt that numerous items should be amended in the most recent draft version of this manual. Many items are essentially editorial in nature, i.e., there are no controversial issues to be resolved. The draft will be editorially revised by the Subcommittee. The goal is to present the final version to the Committee at the 1996 NCWM Interim Meeting for consideration as a voting item at the 1996 NCWM Annual Meeting.

Define Grades for Diesel Fuel

The Subcommittee was charged with investigating the means of defining "premium" and "regular" grades for diesel fuel. Cetane rating had been suggested as a means to distinguish between "premium" (e.g., cetane number greater than or equal to 45) and "regular" (e.g., cetane number less than 45). However, the Engine Manufacturers Association (a technical organization that represents diesel engine manufacturers) is proposing specifications to ASTM that would set limits for "premium" diesel that include properties in addition to cetane number to distinguish between grades. Specifically, lubricity, maximum API gravity, detergency requirements, among other limits, are being proposed along with cetane limits as a "premium" standard. Considering the current activity within ASTM, the Subcommittee Chairman agreed to send a letter encouraging ASTM to move forward as quickly as possible in developing a standard for "premium" diesel fuel. The Subcommittee will closely monitor the ASTM efforts and determine if the issue is progressing at a rate that will offer a solution to the States.

Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Inspection Law

The Subcommittee received comments from Chevron USA Products Company on Section 8. Prohibited Acts of the most recent draft version of the uniform law. Amendments were proposed in an attempt to strengthen this section. Specifically, language was recommended to prohibit falsely representing the brand of a product to the purchaser, and ensure that lubricants marketed to the purchaser have the S.A.E. number classification specified by the purchaser. There was a consensus among Subcommittee members that there is significant merit to the concepts proposed.

Falsey Representing the Brand of a Product

The Subcommittee felt that if a purchaser makes an effort to acquire a particular brand, the purchaser should have some assurance that the product offered for sale truly represents that brand. This is considered basic consumer protection that weights and measures/petroleum quality regulatory programs should provide to the public. Although it was pointed out that enforcement of this provision would entail procedures other than routine sampling and testing of the products, there are various means by which jurisdictions can effectively regulate this requirement. Reasonable and effective methods that are proven include audit of product bill of lading, cooperative programs with industry to analyze for proprietary additives, and surveillance programs whereby inspectors witness and document product commingling.

Recommendation: *The Subcommittee recommends that the following amendment be made to the most recent published draft of the Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Inspection Law. Amend Section 8.1. to read: "Represent engine fuels, petroleum products, or automotive lubricants in any manner that may deceive or tend to deceive the purchaser as to the nature, brand, price, quantity and/or quality of such products."*

S.A.E. Number Classification for Automotive Lubricants

The Subcommittee agreed that the inclusion of a section to reference the S.A.E. number classification would be an appropriate addition to Section 8. Prohibited Acts. The proposal would provide consumer protection to the purchaser by ensuring that the purchased product is truly as represented by the S.A.E. number classification designated.

Recommendation: *Amend Section 8. Prohibited Acts by inserting a new section as Section 8.X. that reads: "Represent automotive lubricants with an S.A.E. (Society of Automotive Engineers) number classification other than the S.A.E. number classification as specified by the intended purchaser."*

Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Inspection Regulation/Need for Survey

Comments were received regarding Section 3.2.6. of the proposed draft (Section 3.1. in the most recent NIST Handbook 130 published uniform regulation). The discussion again centered around the difficulty for marketers to comply with this section due to the wide variety of oxygenates, particularly ethers, that are available for use in today's market. The Subcommittee felt that more information from the States would be needed before a recommendation could be made. The Subcommittee agreed to design a survey to distribute to State agencies in order to gain opinions on the need for oxygenate labeling. After the information is obtained and data is reviewed, the Subcommittee will have the input necessary to properly evaluate this section.

Future Activities of the Subcommittee

The Subcommittee would like to receive direction from the States regarding priority issues that should be addressed in the future. The subcommittee has been charged with expanding the scope of the uniform law and regulation to adequately cover other types of automotive lubricant and fluids. A survey will be developed and distributed to State directors. The survey will solicit opinions on the most important issues that the Subcommittee should address to meet State needs.

Appendix C

Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Inspection Law

Section 1. Purpose

There should be uniform requirements for engine fuels, petroleum products, and automotive lubricants among the several States. This Act provides for the establishment of quality specifications for these products.

Section 2. Scope

The Act establishes a sampling, testing, and enforcement program, provides authority for fee collection, requires registration of engine fuels, and empowers the State to promulgate regulations as needed to carry out the provisions of the Act. It also provides for administrative, civil, and criminal penalties.

Section 3. Definitions

As used in this act:

3.1. Engine Fuel. -- means any liquid or gaseous matter used for the generation of power in an internal combustion engine.

3.2. Director. -- means the _____ of the Department of _____ and designated agents.

3.3. Person. -- means an individual, corporation, company, society, association, partnership, or governmental entity.

3.4. ASTM. -- means the American Society for Testing and Materials, a national voluntary consensus standards organization formed for the development of standards on characteristics and performance of materials, products, systems, and services, and the promotion of related knowledge.

3.5. Petroleum Products. -- means products obtained from distilling and processing of petroleum (crude oil), unfinished oils, recycled oils, natural gas liquids, refinery blend stocks, and other miscellaneous hydrocarbon compounds.

3.6. Automotive Lubricants. -- means any material interposed between two surfaces that reduces the friction or wear between them.

3.7. Engine Fuel Designed for Special Use. -- means engine fuels designated by the Director requiring registration. These fuels normally have no ASTM or other national consensus standards applying to their quality or useability; common special fuels are racing fuels and those intended for agricultural and other off-road applications.

3.8. Sold. -- means kept, offered, or exposed for sale, or sold.

Section 4. Administration, Adoption of Standards, and Rules

The provisions of the Act shall be administered by the Director. For the purpose of administering and giving effect to the provisions of this Act, the specification and test method standards set forth in the most recent edition of the Annual Book of ASTM Standards and supplements thereto, and revisions thereof, are adopted except as amended or modified as required to comply with Federal and State laws by the Director. When no ASTM standard exists, other generally recognized national consensus standards may be used. The Director is empowered to write rules and regulations on the advertising, posting of prices, labeling, standards for, and identity of fuels, petroleum products, and automotive lubricants and is authorized to establish a testing laboratory.

Section 5. General Duties and Powers

The Director shall have the authority to:

5.1. Enforce and administer all the provisions of this Act by inspections, analyses, and other appropriate actions.

5.2. Have access during normal business hours to all places where engine fuels, petroleum products, and automotive lubricants are kept, transferred, offered, exposed for sale, or sold for the purpose of examination, inspection, taking of samples,

and investigation. If such access shall be refused by the owner or agent or other persons leasing the same, the Director may obtain an administrative search warrant from a court of competent jurisdiction.

5.3. Collect, or cause to be collected, samples of engine fuels, petroleum products, and automotive lubricants marketed in this State, and cause such samples to be tested or analyzed for compliance with the provisions of this Act.

5.4. Define engine fuels for special use and refuse, revoke, suspend, or issue a stop-order if found not to be in compliance and remand stop-order if the engine fuel for special use is brought into full compliance with this Act.

5.5. Issue a stop-sale order for any engine fuel; petroleum product, and automotive lubricant found not to be in compliance and remand stop-sale order if the engine fuel, petroleum product, or automotive lubricant is brought into full compliance with this Act.

5.6. Refuse, revoke, or suspend the registration of an engine fuel, petroleum product, or automotive lubricant.

5.7. Delegate to appropriate personnel any of these responsibilities for the proper administration of this Act.

Section 6. Registration of Engine Fuels Designed for Special Use

All engine fuels designed for special use must be registered with the Director. Such registration shall include:

6.1. Name, brand, or trademark under which the fuel will be sold.

6.2. Name and address of person registering the engine fuel.

6.3. The special use for which the engine fuel is designed.

6.4. Certification, declaration, or affidavit stating the specifications which the fuel will meet upon testing.

Section 7. Inspection Fee

There shall be a fee of \$_____ per appropriate unit of measure on all products covered under the scope of this Act marketed within this State for the purposes of

administering and effectively enforcing the provisions of this Act.

Section 8. Prohibited Acts

It shall be unlawful to:

8.1. Represent engine fuels, petroleum products, or automotive lubricants in any manner that may deceive or tend to deceive the purchaser as to the nature, price, quantity and/or quality of such products.

8.2. Fail to register an engine fuel designed for special use.

8.3. Submit incorrect, misleading, or false information regarding the registration of an engine fuel designed for special use.

8.4. Hinder or obstruct the Director in the performance of the Director's duties.

8.5. Represent an engine fuel, petroleum product, or automotive lubricant that is contrary to the provisions of this Act.

Section 9. Administrative and Civil Penalties

9.1. Assessment of Penalties. Any person who by himself or herself, by his or her servant or agent, or as the servant or agent of another person, commits any of the acts enumerated in § 22 may be assessed by the _____ a civil penalty of:

(a) not less than \$____ nor more than \$____ for a first violation,

(b) not less than \$____ nor more than \$____ for a second violation within ____ from the date of the first violation, and

(c) not less than \$____ nor more than \$____ for a third violation within ____ from the date of the first violation.

9.2. Administrative Hearing. Any person subject to a civil penalty shall have a right to request an administrative hearing within ____ days of receipt of the notice of the penalty. The director or his/her designee shall be authorized to conduct the hearing after giving appropriate notice to the respondent. The decision of the director shall be subject to appropriate judicial review.

9.3. Collection of Penalties. If the respondent has exhausted his or her administrative appeals and the civil penalty has been upheld, he or she shall pay the civil penalty within _____ days after the effective date of the final decision. If the respondent fails to pay the penalty, a civil action may be brought by the director in any court of competent jurisdiction to recover the penalty. Any civil penalty collected under this Act shall be transmitted to _____.

Section 10. Criminal Penalties

10.1. Misdemeanor. Any person who violates any provision of this Act or regulations promulgated thereto shall be guilty of a Class _____ misdemeanor, and upon conviction shall be punished by a fine of not less than \$_____ nor more than \$_____, or imprisonment for not less than _____ nor more than _____, or both fine and imprisonment.

10.2. Felony. Any person who intentionally violates any provision of this Act or regulations promulgated thereto or is convicted under the misdemeanor provisions of this section more than three times in a 2-year period shall be guilty of a Class _____ felony, and upon conviction shall be punished by a fine of not less than \$_____ nor more than \$_____, or imprisonment for not less than _____ nor more than _____, or both fine and imprisonment.

Section 11. Restraining Order and Injunction

The Director is authorized to apply to any court of competent jurisdiction for a restraining order, or a temporary or permanent injunction, restraining any person from violating any provision of this Act.

Section 12. Severability Provisions

If any word, phrase, provision, or portion of this Act shall be held in a court of competent jurisdiction to be unconstitutional or invalid, the unconstitutionality or invalidity shall apply only to such word, phrase, provision, or portion, and for this purpose the provisions of this Act are declared to be severable.

Section 13. Repeal of Conflicting Laws

All laws and parts of laws contrary to or inconsistent with the provisions of this Act are repealed except as to offense committed, liabilities incurred, and claims made thereunder prior to the effective date of this Act.

Section 14. Citation

This Act may be cited as the "Engine Fuels, Petroleum Products, and Automotive Lubricants Inspection Act of _____."

Section 15. Effective Date

This Act shall become effective on _____.

Appendix D
**Uniform Regulation for Engine Fuels,
 Petroleum Products, and Automotive
 Lubricants**

1. Definitions

1.1. ASTM. -- The American Society for Testing and Materials means the national voluntary consensus standards organization formed for the development of standards on characteristics and performance of materials, products, systems, and services; and the promotion of related knowledge.

1.2. Antiknock Index (AKI). -- means the arithmetic average of the Research octane number (RON) and Motor octane number (MON): $AKI = (RON+MON)/2$. This value is called by a variety of names, in addition to antiknock index, including: Octane rating, Posted octane, $(R+M)/2$ octane.

1.3. Automotive Fuel Rating. -- means the automotive fuel rating required under the amended Octane Certification and Posting Rule (or as amended, the Fuel Rating Rule), 16 CFR Part 306. Under this Rule, sellers of liquid automotive fuels, including alternative fuels, must determine, certify, and post an appropriate automotive fuel rating. The automotive fuel rating for gasoline is the antiknock index (octane rating). The automotive fuel rating for alternative liquid fuels consists of the common name of the fuel along with a disclosure of the amount, expressed as a minimum percentage by volume, of the principal component of the fuel. For alternative liquid automotive fuels, a disclosure of other components, expressed as a minimum percentage by volume, may be included, if desired.

1.4. Automotive Gasoline, Automotive Gasoline-Oxygenate Blend. -- means a type of fuel suitable for use in spark-ignition automobile engines and also commonly used in marine and non-automotive applications.

1.5. Aviation Gasoline. -- means a type of gasoline suitable for use as a fuel in an aviation spark-ignition internal combustion engine.

1.6. Aviation Turbine Fuel. -- means a refined middle distillate suitable for use as a fuel in an aviation gas turbine internal combustion engine.

1.7. Base Gasoline. -- means all components other than ethanol in a blend of gasoline and ethanol.

1.8. Biodiesel. -- means a blend consisting of diesel fuel and a substantial amount of esterified animal fats and/or vegetable oil(s).

1.9. Cetane Index. -- means an approximation of the cetane number of distillate diesel fuel, which does not contain a cetane improver additive, calculated from the density and distillation measurements.

1.10. Cetane Number. -- means a numerical measure of the ignition performance of a diesel fuel obtained by comparing it to reference fuels in a standardized engine test.

1.11. Compressed Natural Gas (CNG). -- means natural gas which has been compressed and dispensed into fuel storage containers and is suitable for use as an engine fuel.

1.12. Denatured Fuel Ethanol. -- means "ethanol" as defined in § 1.19. below.

1.13. Diesel Fuel. -- means a refined middle distillate suitable for use as a fuel in a compression-ignition (diesel) internal combustion engine.

1.14. Distillate. -- means any product obtained by condensing the vapors given off by boiling petroleum or its products.

1.15. EPA. -- means the United States Environmental Protection Agency.

1.16. E85 Fuel Ethanol. -- means a blend of ethanol and hydrocarbons of which the ethanol portion is nominally 85 to 75 volume percent denatured fuel ethanol.

1.17. Engine Fuel. -- means any liquid or gaseous matter used for the generation of power in an internal combustion engine.

1.18. Engine Fuels Designed for Special Use. -- means engine fuels designated by the Director requiring registration. These fuels normally have no ASTM or other national consensus standards applying to their quality or useability; common special fuels are racing fuels and those intended for agricultural and other off-road applications.

1.19. Ethanol. -- also known as "Denatured Fuel Ethanol," means nominally anhydrous ethyl alcohol meeting ASTM D 4806 standards. It is intended to be blended with gasoline for use as a fuel in a spark-ignition internal combustion engine. The denatured fuel ethanol is first made unfit for drinking by the addition of Bureau of Alcohol, Tobacco, and Firearms (BATF) approved substances before blending with gasoline.

1.20. Fuel Oil. -- means a refined oil middle distillates, heavy distillates, or residues of refining, or blends of these, suitable for use as a fuel for heating or power generation, the classification of which shall be defined by ASTM D 396.

1.21. Gasoline. -- means a volatile mixture of liquid hydrocarbons generally containing small amounts of additives suitable for use as a fuel in a spark-ignition internal combustion engine.

1.22. Gasoline-Alcohol Blend. -- means a fuel consisting primarily of gasoline and a substantial amount (more than 0.35 mass percent oxygen, or more than 0.15 mass percent oxygen if methanol is the only oxygenate) of one or more alcohols.

1.23. Gasoline Gallon Equivalent (GGE). -- Gasoline gallon equivalent (GGE) means 2.567 kilograms (5.660 lb) of natural gas.

1.24. Gasoline Liter Equivalent (GLE). -- Gasoline liter equivalent (GLE) means 0.678 kilogram (1.495 lb) of natural gas.

1.25. Gasoline-Oxygenate Blend. -- means a fuel consisting primarily of gasoline along with a substantial amount (more than 0.35 mass percent oxygen, or more than 0.15 mass oxygen if methanol is the only oxygenate) of one or more oxygenates.

1.26. Kerosene. -- (or "Kerosine") means a refined middle distillate suitable for use as a fuel for heating or illuminating, the classification of which shall be defined by ASTM D 3699.

1.27. Lead Substitute. -- means an EPA-registered gasoline additive suitable, when added in small amounts to fuel, to reduce or prevent exhaust valve recession (or seat wear) in automotive spark-ignition internal combustion engines designed to operate on leaded fuel.

1.28. Lead Substitute Engine Fuel. -- means, for labeling purposes, a gasoline or gasoline-oxygenate blend that contains a "lead substitute."

1.29. Leaded. -- means, for labeling purposes, any gasoline or gasoline-oxygenate blend which contains more than 0.013 gram lead per liter (0.05 g lead per U.S. gal). NOTE: EPA defines leaded fuel as one which contains more than 0.0013 gram phosphorus per liter (0.005 g per U.S. gal), or any fuel to which lead or phosphorus is intentionally added.

1.30. Liquefied Natural Gas (LNG). -- means natural gas that has been liquefied at -126.1 °C (-259 °F) and stored in insulated cryogenic tanks for use as an engine fuel.

1.31. Liquefied Petroleum Gas (LPG). -- means a mixture of normally gaseous hydrocarbons, predominantly propane, or butane, or both, that has been liquefied by compression or cooling, or both to facilitate storage, transport, and handling.

1.32. Low Sulfur. -- means low sulfur diesel fuel that meets ASTM D 975 (e.g., Grade Low Sulfur No. 1-D or Grade Low Sulfur No. 2-D) standards. Diesel fuel containing higher amounts of sulfur for off-road use is defined by EPA regulations.

1.33. M100 Fuel Methanol. -- means nominally anhydrous methyl alcohol, generally containing small amounts of additives, suitable for use as a fuel in a compression-ignition internal combustion engine.

1.34. M85 Fuel Methanol. -- means a blend of methanol and hydrocarbons of which the methanol portion is nominally 70 to 85 volume percent.

1.35. Motor Octane Number. -- means a numerical indication of a spark-ignition engine fuel's resistance to knock obtained by comparison with reference fuels in a standardized ASTM D 2700 Motor Method engine test.

1.36. Oxygen Content of Gasoline. -- means the percentage of oxygen by mass contained in a gasoline.

1.37. Oxygenate. -- means an oxygen-containing, ashless, organic compound, such as an alcohol or ether, which can be used as a fuel or fuel supplement.

1.38. Reformulated Gasoline. -- means a volatile mixture of liquid hydrocarbons and oxygenates meeting

the reformulated gasoline requirements of the Clean Air Act Amendments of 1990 and suitable for use as a fuel in a spark-ignition internal combustion engine.

1.39. Research Octane Number. -- means a numerical indication of a spark-ignition engine fuel's resistance to knock obtained by comparison with reference fuels in a standardized ASTM D 2699 Research Method engine test.

1.40. SAE. -- means the Society of Automotive Engineers, a technical organization for engineers, scientists, technicians, and others in positions that cooperate closely in the engineering, design, manufacture, use, and maintainability of self-propelled vehicles.

1.41. Substantially Similar. -- means the EPA's "Substantially Similar" rule, Section 211 (f) (1) of the Clean Air Act [42 U.S.C. 7545 (f) (1)].

1.42. Total Alcohol. -- means the aggregate total in volume percent of all alcohol contained in any fuel defined in this Chapter.

1.43. Total Oxygenate. -- means the aggregate total in volume percent of all oxygenates contained in any fuel defined in this Chapter.

1.44. Unleaded. -- in conjunction with "engine fuel" or "gasoline" means any gasoline or gasoline-oxygenate blend to which no lead or phosphorus compounds have been intentionally added and which contains not more than 0.013 gram lead per liter (0.05 g lead per U.S. gal) and not more than 0.0013 gram phosphorus per liter (0.005 g phosphorus per U.S. gal).

2. Standard Fuel Specifications

2.1. Gasoline and Gasoline-Oxygenate Blends (as defined in this regulation) shall meet the following requirements:

2.1.1. The most recent version of ASTM D 4814, "Standard Specification for Automotive Spark-Ignition Engine Fuel," except that volatility standards for unleaded gasoline blended with ethanol shall not be more restrictive than those adopted under the rules, regulations, and Clean Air Act waivers of the U.S. Environmental Protection Agency (which includes rules promulgated by the State). Gasoline blended with ethanol shall be blended under any of the following three options:

2.1.1.1. The base gasoline used in such blends shall meet the requirements of ASTM D 4814, or

2.1.1.2. The blend shall meet the requirements of ASTM D 4814, or

2.1.1.3. The base gasoline used in such blends shall meet all the requirements of ASTM D 4814 except distillation, and the blend shall meet the distillation requirements of the ASTM specification.

2.1.2. Blends of gasoline and ethanol shall not exceed the ASTM D 4814 vapor pressure standard by more than 1.0 psi.

2.1.3. Minimum AKI. -- The AKI shall not be less than the AKI posted on the product dispenser or as certified on the invoice, bill of lading, shipping paper, or other documentation;

2.1.4. Minimum Motor Octane Number. -- The minimum motor octane number shall not be less than 82 for gasoline with an AKI of 87 or greater;

2.1.5. Minimum Lead Content to Be Termed "Leaded". -- Gasoline and gasoline-oxygenate blends sold as "leaded" shall contain a minimum of 0.013 gram of lead per liter (0.05 g per U.S. gal);

2.1.6. Lead Substitute Gasoline. -- Gasoline and gasoline-oxygenate blends sold as "lead substitute" gasoline shall contain a lead substitute which provides protection against exhaust valve seat recession equivalent to at least 0.026 gram of lead per liter (0.10 g per U.S. gal).

2.1.6.1. Documentation of Exhaust Valve Seat Protection. -- Upon the request of the director, the lead substitute additive manufacturer shall provide documentation to the director that demonstrates that the treatment level recommended by the additive manufacturer provides protection against exhaust valve seat recession equivalent to or better than 0.026 gram per liter (0.1 g/gal) lead. The director may review the documentation and approve the lead substitute additive before such additive is blended into gasoline. This documentation shall consist of:

2.1.6.1.1. Test results as published in the Federal Register by the EPA Administrator as required in Section 211(f)(2) of the Clean Air Act; or

2.1.6.1.2. Until such a time as the EPA Administrator develops and publishes a test procedure to determine the additive's effectiveness in reducing valve seat wear, test results and description of the test procedures used in comparing the effectiveness of 0.026 gram per liter lead and the recommended treatment level of the lead substitute additive shall be provided.

2.1.7. Blending. -- Leaded, lead substitute and unleaded gasoline-oxygenate blends shall be blended according to the EPA "substantially similar" rule or an EPA waiver for unleaded fuel.

2.2. Diesel Fuel shall meet the most recent version of ASTM D 975, "Standard Specification for Diesel Fuel Oils."

2.3. Aviation Turbine Fuels shall meet the most recent version of ASTM D 1655, "Standard Specification for Aviation Turbine Fuels."

2.4. Aviation Gasoline shall meet the most recent version of ASTM D 910, "Standard Specification for Aviation Gasoline."

2.5. Fuel Oils shall meet the most recent version of ASTM D 396, "Standard Specification for Fuel Oils."

2.6. Kerosene (Kerosine) shall meet the most recent version of ASTM D 3699, "Standard Specification for Kerosine."

2.7. Ethanol intended for blending with gasoline shall meet the most recent version of ASTM D 4806, "Standard Specification for Denatured Fuel Ethanol for Blending with Gasolines for Use as Automotive Spark-Ignition Engine Fuel."

2.8. Liquefied Petroleum (LP) Gases shall meet ASTM D 1835, "Standard Specification for Liquefied Petroleum (LP) Gases."

Note: Also reference Gas Processors Association 2140, "Liquefied Petroleum Gas Specification and Test Methods."

2.9. Compressed Natural Gas (CNG) shall meet the most recent version of SAE J 1616, "Recommended Practice for Compressed Natural Gas Vehicle Fuel."

Section 3. Classification and Method of Sale of Petroleum Products

3.1. General Considerations

3.1.1. Documentation. -- When gasoline; gasoline-oxygenate blends; reformulated gasoline; M85 and M100 fuel methanol; E85 and E100 fuel ethanol; liquefied petroleum (LP) gases; compressed natural gas; liquefied natural gas; biodiesel; diesel fuel; kerosene; aviation gasoline; aviation turbine fuels; or, fuel oils are sold, an invoice, bill of lading, shipping paper or other documentation, must accompany each delivery other than a retail sale. This document must identify the quantity, the name of the product, the particular grade of the product, the applicable automotive fuel rating, and oxygenate type and content (if applicable), the name and address of the seller and buyer, and the date and time of the sale. Documentation must be retained at the retail establishment for a period not less than 1 year.

3.1.2. Retail Dispenser Labeling. -- All retail dispensing devices must identify conspicuously the type of product, the particular grade of the product, and the applicable automotive fuel rating.

3.1.3. Grade Name. -- The sale of any product under any grade name that indicates to the purchaser that it is of a certain automotive fuel rating or ASTM grade shall not be permitted unless the automotive fuel rating or grade indicated in the grade name is consistent with the value and meets the requirements of Section 2, Standard Fuel Specifications.

3.2. Automotive Gasoline and Automotive Gasoline-Oxygenate Blends

3.2.1. Posting of Antiknock Index Required. -

All automotive gasoline and automotive gasoline-oxygenate blends shall post the antiknock index in accordance with applicable regulations, 16 CFR Part 306 issued pursuant to the Petroleum Marketing Practices Act, as amended.

3.2.2. When the Term "Leaded" May Be Used. -- The term "leaded" shall only be used when the fuel meets specification requirements of paragraph 2.1.5.

3.2.3. Use of Lead Substitute Must Be Disclosed. -- Each dispensing device from which gasoline or gasoline oxygenate blend containing a lead substitute is dispensed shall display the following legend: "Contains Lead Substitute." The lettering of this legend

shall not be less than 12 millimeters (1/2 in) in height and the color of the lettering shall be in definite contrast to the background color to which it is applied.

3.2.4. Nozzle Requirements for Leaded Fuel.

-- Each dispensing device from which gasoline or gasoline-oxygenate blends that contains lead in amounts sufficient to be considered "leaded" gasoline, or lead substitute engine fuel, is sold shall be equipped with a nozzle spout having a terminal end with an outside diameter of not less than 23.63 millimeters (0.930 in).

3.2.5. Prohibition of Terms. -- It is prohibited to use specific terms to describe a grade of gasoline or gasoline-oxygenate blend unless it meets the minimum antiknock index requirement shown in Table 1.

3.2.6. Method of Retail Sale - Type of Oxygenate Must be Disclosed. -- All automotive gasoline or automotive gasoline-oxygenate blends kept, offered, or exposed for sale, or sold, at retail containing at least 1 percent by volume of any oxygenate or combination of oxygenates shall be identified as "with" or "containing" (or similar wording) the specific type of oxygenate(s) in the engine fuel. For example, the label may read "contains ethanol" or "with MTBE/ETBE." This information shall be posted on the upper 50 percent of the dispenser front panel in a position clear and conspicuous from the driver's position, in a type at least 1/2 inch in height 1/16 inch stroke (width of type). (Amended 1991)

3.2.7. Documentation for Dispenser Labeling Purposes.

-- The retailer must be provided, at the time of delivery of the fuel, on an invoice, bill of lading, shipping paper, or other documentation, a declaration of any oxygenate or combination of oxygenates present in concentrations of at least 1 percent by volume in the fuel. This documentation is only for dispenser labeling purposes; it is the responsibility of any potential blender to determine the total oxygen content of the engine fuel before blending. (Amended 1991)

3.3. Diesel Fuel

3.3.1. Labeling of Grade Required. -- Diesel Fuel shall be identified by grades No. 1-D, No. 1-D (low sulfur), No. 2-D, No. 2-D (low sulfur), or No. 4-D. Each retail dispenser of diesel fuel shall be labeled according to the grade being dispensed except the words "low sulfur" are not required.

3.3.2. Location of Label. -- These labels shall be located on the upper 50 percent of the dispenser front panel in a position clear and conspicuous from the drivers position, in a type at least 12 millimeter (1/2 in) in height, 1.5 millimeter (1/16 in) stroke (width of type).

3.4. Aviation Turbine Fuels

3.4.1. Labeling of Grade Required. -- Aviation turbine fuels shall be identified by Jet A, Jet A-1, or Jet B.

Table 1. Minimum Antiknock Index Requirements

Term	Minimum Antiknock Index	
	ASTM D 4814 Altitude Reduction Areas IV and V	All Other ASTM D 4814 Areas
Premium, Super, Supreme, High Test	90	91
Midgrade, Plus	87	89
Regular Leaded	86	89
Regular, Unleaded (alone)	85	87

3.4.2. NFPA Labeling Requirements Also Apply. -- Each dispenser or airport fuel truck dispensing aviation turbine fuels shall be labeled in accordance with the most recent edition of National Fire Protection Association NFPA 407, "Standard for Aircraft Fuel Servicing." NFPA 407, 1990 Edition: Section 2-3.18 Product Identification Signs. Each aircraft fuel servicing vehicle shall have a sign on each side and the rear to indicate the product. The sign shall have letters at least 3 inches (75 mm) high of color sharply contrasting with its background for visibility. It shall show the word "FLAMMABLE" and the name of the product carried, such as "JET A," "JET B," "GASOLINE," or "AVGAS." (NOTE: Refer to the most recent edition.)

3.5. Aviation Gasoline

3.5.1. Labeling of Grade Required. -- Aviation gasoline shall be identified by Grade 80, Grade 100, or Grade 100LL.

3.5.2. NFPA Labeling Requirements Also Apply. -- Each dispenser or airport fuel truck dispensing aviation gasoline shall be labeled in accordance with the most recent edition of National Fire Protection Association NFPA 407, "Standard for Aircraft Fuel Servicing."

NFPA 407, 1990 Edition: Section 2-3.18 Product Identification Signs. Each aircraft fuel servicing vehicle shall have a sign on each side and the rear to indicate the product. The sign shall have letters at least 3 inches (75 mm) high of color sharply contrasting with its background for visibility. It shall show the word "FLAMMABLE" and the name of the product carried, such as "JET A," "JET B," "GASOLINE," or "AVGAS." (NOTE: Refer to the most recent edition.)

3.6. Fuel Oils

3.6.1. Labeling of Grade Required. -- Fuel Oil shall be identified by the grades of No. 1, No. 2, No. 4 (Light), No. 4, No. 5 (Light), No. 5 (Heavy), or No. 6.

3.7. Kerosene (Kerosine)

3.7.1. Labeling of Grade Required. -- Kerosene shall be identified by the grades No. 1-K or No. 2-K.

3.7.2. Additional Labeling Requirements. -- Each retail dispenser of kerosene shall be labeled as 1-K Kerosene or 2-K. In addition, No. 2-K dispensers shall display the following legend:

3.7.2.1. "Warning - Not Suitable For Use In Unvented Heaters Requiring No. 1-K."

3.7.2.2. The lettering of this legend shall not be less than 12 millimeters (1/16 in) in height by 1.5 millimeters (1/16 in) strokes; block style letters and the color of lettering shall be in definite contrast to the background color to which it is applied.

3.8. Fuel Ethanol

3.8.1. How to Identify Fuel Ethanol. -- Fuel ethanol shall be identified by the capital letter E followed by the numerical value volume percentage. (Example: E85)

3.8.2. Retail Dispenser Labeling. -- Each retail dispenser of fuel ethanol shall be labeled with the capital letter E followed by the numerical value volume percent denatured ethanol and ending with the word "ethanol." (Example: E85 Ethanol)

3.8.3. Additional Labeling Requirements. -- Fuel ethanol shall be labeled with its automotive fuel rating in accordance with 16 CFR Part 306.

3.9. Fuel Methanol

3.9.1. How Fuel Methanol is to Be Identified.

-- Fuel methanol shall be identified by the capital letter M followed by the numerical value volume percentage of methanol. (Example: M85)

3.9.2. Retail Dispenser Labeling. -- Each retail dispenser of fuel methanol shall be labeled by the capital letter M followed by the numerical value volume percent and ending with the word "methanol." (Example: M85 Methanol)

3.9.3. Additional Labeling Requirements. -- Fuel methanol shall be labeled with its automotive fuel rating in accordance with 16 CFR Part 306.

3.10. Liquefied Petroleum (LP) Gas

3.10.1. How LPG is to Be Identified. -- Liquefied petroleum gases shall be identified by grades Commercial Propane, Commercial Butane, Commercial PB Mixtures or Special-Duty Propane (HD5).

3.10.2. Retail Dispenser Labeling. -- Each retail dispenser of liquefied Petroleum gases shall be labeled as "Commercial Propane," "Commercial Butane,"

"Commercial PB Mixtures," or "Special-Duty Propane (HDS)."

3.10.3. Additional Labeling Requirements. -- Liquefied Petroleum Gas shall be labeled with its automotive fuel rating in accordance with 16 CFR Part 306.

3.10.4. NFPA Labeling Requirements also apply. (Refer to the most recent edition of NFPA 58.)

3.11. Compressed Natural Gas

3.11.1. How Compressed Natural Gas Is to Be Identified. -- For the purposes of this regulation, compressed natural gas shall be identified by the term "Compressed Natural Gas" or "CNG."

3.11.2. Retail Sales of Compressed Natural Gas Sold as a Vehicle Fuel

3.11.2.1. Method of Retail Sale. -- All compressed natural gas kept, offered, or exposed for sale and sold at retail as a vehicle fuel shall be in terms of the gasoline liter equivalent (GLE) or gasoline gallon equivalent (GGE).

3.11.2.2. Retail Dispenser Labeling.

3.11.2.2.1. Identification of Product. -- Each retail dispenser of compressed natural gas shall be labeled as "Compressed Natural Gas."

3.11.2.2.2. Conversion Factor. -- All retail compressed natural gas dispensers shall be labeled with the conversion factor in terms of kilograms or pounds. The label shall be permanently and conspicuously displayed on the face of the dispenser and shall have either the statement "1 Gasoline Liter Equivalent (GLE) is equal to 0.678 kg of Natural Gas" or "1 Gasoline Gallon Equivalent (GGE) is equal to 5.660 lb of Natural Gas" consistent with the method of sale used.

3.11.2.2.3. Pressure. -- CNG is dispensed into vehicle fuel containers with working pressures of 16,574 kPa, 20,684 kPa, or 24,821 kPa. The dispenser shall be labeled 16,574 kPa, 20,684 kPa, or 24,821 kPa corresponding to the pressure of the CNG dispensed by each fueling hose.

3.11.2.2.4. NFPA Labeling. -- NFPA Labeling requirements also apply. (Refer to NFPA 52.)

3.11.3. Nozzle Requirements for CNG. -- CNG fueling nozzles shall comply with ANSI/AGA/CGA NGV 1.

3.12. Liquefied Natural Gas

3.12.1. How Liquefied Natural Gas Is to Be Identified. -- For the purposes of this regulation, liquefied natural gas shall be identified by the term "Liquefied Natural Gas" or "LNG."

3.12.2. Labeling of Retail Dispensers of Liquefied Natural Gas Sold as a Vehicle Fuel

3.12.2.1. Identification of Product. -- Each retail dispenser of liquefied natural gas shall be labeled as "Liquefied Natural Gas."

3.12.2.2. Automotive Fuel Rating. -- LNG automotive fuel shall be labeled with its automotive fuel rating in accordance with 16 CFR Part 306.

3.12.2.3. NFPA Labeling. -- NFPA Labeling requirements also apply. (Refer to NFPA 57.)

Section 4. Retail Storage Tanks

4.1. Water in Gasoline-Alcohol Blends, Aviation Gas, and Aviation Turbine Fuel. -- No water phase greater than 6 millimeters (1/4 in) as determined by an appropriate detection paste, is allowed to accumulate in any tank utilized in the storage of gasoline-alcohol blend, aviation gasoline, and aviation turbine fuel.

4.2. Water in Gasoline, Diesel, Gasoline-Ether, and Other Fuels. Water shall not exceed 50 millimeters (2 in) in depth when measured with water indicating paste in any tank utilized in the storage of biodiesel, diesel, gasoline, gasoline-ether blends, and kerosene sold at retail except as required in section 4.1.

4.3. Product Storage Identification

4.3.1. Fill Connection Labeling. -- The fill connection for any petroleum product storage tank or vessel supplying engine-fuel devices shall be permanently, plainly, and visibly marked as to the product contained.

4.3.2. Declaration of Meaning of Color Code. -- When the fill connection device is marked by means of

a color code, the color code shall be conspicuously displayed at the place of business.

4.4. Volume of Product Information. -- Each retail location shall maintain on file a calibration chart or other means of determining the volume of each regulated product in each storage tank and the total capacity of such storage tank(s). This information shall be supplied immediately to the Director.

Section 5. Condemned Product

5.1. Stop Sale Order at Retail. -- A stop sale order may be issued to retail establishment dealers for fuels failing to meet specifications or when a condition exists that causes product degradation. A release from a Stop Sale order will be awarded only after final disposition has been agreed upon by the director. Confirmation of disposition shall be submitted in writing on form(s) provided by the Director and contain an explanation for the fuels' failure to meet specifications. Upon discovery of fuels failing to meet specifications, meter readings and physical inventory shall be taken and reported in confirmation for disposition. Specific variations or exemptions may be made for fuels designed for special equipment or services and for which it can be demonstrated that the distribution will be restricted to those uses.

5.2. Stop Sale Order at Terminal or Bulk Plant Facility. -- A stop sale order may be issued when products maintained at terminals or bulk plant facilities fail to meet specifications or when a condition exists that may cause product degradation. The terminal or bulk storage plant shall immediately notify all customers that received those product(s) and make any arrangements necessary to replace or adjust to specifications those product(s). A release from a Stop Sale order will be awarded only after final disposition has been agreed upon by the Director. Confirmation of disposition of products shall be made available in writing to the Director. Specific variations or exemptions may be made for fuels used for blending purposes or designed for special equipment or services and for which it can be demonstrated that the distribution will be restricted to those uses.

Section 6. Product Registration

6.1. Engine Fuels Designed for Special Use. -- All engine fuels designed for special use that do not meet ASTM specifications or standards addressed in Section 2 shall be registered with the director on forms prescribed by the director 30 days prior to when the

registrant wishes to engage in sales. The registration form shall include all of the following information:

- 6.1.1.** Business name and address(es).
- 6.1.2.** Mailing address if different than business address.
- 6.1.3.** Type of ownership of the distributor or retail dealer, such as an individual, partnership, association, trust, corporation, or any other legal entity or combination thereof.
- 6.1.4.** An authorized signature, title, and date for each registration.
- 6.1.5.** Product brand name and product description.
- 6.1.6.** A product specification sheet shall be attached.
- 6.2.** Registration is subject to annual renewal.
- 6.3.** Re-registration is required 30 days prior to any changes in Section 6.1.
- 6.4.** The director may decline to register any product which actually or by implication would deceive or tend to deceive a purchaser as to the identity or the quality of the engine fuel.
- 6.5.** The registration is not transferable.

Section 7. Test Methods and Reproducibility Limits

7.1. ASTM Standard Test Methods referenced for use within the applicable Standard Specification shall be used to determine the specification values for enforcement purposes.

7.2. Reproducibility Limits

7.2.1. AKI Limits. -- When determining the antiknock index (AKI) acceptance or rejection of a gasoline sample, the AKI reproducibility limits as outlined in ASTM D 4814 Appendix X1 shall be acknowledged for enforcement purposes.

7.2.2. The reproducibility limits of the ASTM standard test method used for each test performed shall be acknowledged for enforcement purposes, except as indicated in 7.2.1.

7.2.3. Dispute Resolution. -- In the event of a dispute over a reported test value, the guidelines presented in the most recent version of ASTM D 3244, "Standard Practice for Utilization of Test Data to Determine Conformance with Specifications," shall be used to determine the acceptance or rejection of the sample.

Appendix E

Examination Procedure for Price Verification

**As Recommended for Adoption
at the
80th NCWM Annual Meeting
July 16-20, 1995**

Highlights of the 5th Draft Examination Procedure for Price Verification

This proposal is essentially the same as the fourth draft since most of the revisions made by the Laws and Regulations Committee were editorial in nature. This proposal is based on comments presented to the Laws and Regulations Committee of the National Conference on Weights and Measures at the Interim Meeting in January 1995 and on written comments received as of February 1, 1995. Most of the editorial revisions and significant changes are listed below. If adopted by the NCWM, this procedure will be incorporated in a new section in NIST Handbook 130, "Uniform Laws and Regulations."

Revisions

IV. Accuracy

- Redundant information deleted and the section revised for clarity.

VI. Uniform Laws

- In C. Penalties - the text of the Section 23. Civil Penalties from the Uniform Weights and Measures Law was deleted because it is available in NIST Handbook 130. The introduction was amended to make it clear that criminal penalties can also be applied.
- In C.3. Customer Indications on Cash Registers and Point-of-Sale Systems - the proposed addition to the Uniform Weights and Measures Law was amended to include a exemption for equipment already in service in a jurisdiction that adopts this requirement.

Examination Procedure for Price Verification

- The test procedure was changed to a two-column format to save space.

Section 2. Definitions

- 2.1. Area - amended to make clear that an entire store can be considered an "area."
- 2.5. Hand-held Scanning Device - the note following this definition was amended to improve clarity.
- 2.6. (a) - Lower Levels of Enforcement Action - reference to "administrative hearing" was moved to (b) Higher Levels of Enforcement Action.
- 2.13. Price Look-Up Code - amended for clarity and the reference to verifying the cause of error during manual entry was deleted.
- 2.14. Price - (b) Price Charged was amended for clarity.
- 2.23. Universal Product Code - the graphic and information on the structure of the U.P.C. were removed because several comments indicated that the information was unnecessary.

Section 3. Test Notes

- 3.1. Safety and Health - Revised for clarity. References to sanitation were added.
- 3.2. Confidentiality - Revised for clarity.

Section 5. Pre-Inspection Tasks

Laws and Regulations Committee

- Revised to make it clear that use of a hand-held scanner is optional.

Section 7. Test Procedures

- In 7.3. Sample Collection Procedures - the second note was revised to eliminate reference to the sample size.
- In 7.3. - A note regarding "advertised" sale items in department stores was added.
- In 7.3.1. - A new graphic (Figure 1) was added to show how to collect a storewide sample.
- In 7.3.1. - A new graphic (Figure 5) was added to show how samples could be selected in a department store.

Section 9. Evaluation of Inspection Results

- In 9.1 Definition of Errors - (a) was amended for clarity to recognize that stores can intentionally undercharge when they either raise or lower the price of an item, in (b) reference to nonstandard U.P.C. symbol deleted in response to comments which indicated the requirement was not needed because this type error rarely occurred and could be handled in a number of different ways by a store, and in (c) the word "sign" was changed to "notice."

Section 11. Enforcement Procedures

- In 11.2 Model Enforcement Levels - references to "levels of accuracy" were deleted.

Section 14. Appendices

- A Price Verification Tally Sheet for Department Stores was added.
- Appendix B. References was deleted.

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Examination Procedure for Price Verification in Retail Stores

Section 1. Scope

These procedures may be used to conduct price verification inspections in any type of store, including those that use Universal Product Code (U.P.C.) scanners and price-look-up codes at the checkout counter as a means for pricing. Procedures are included for test purchases and verifying manual entries. The purpose of the procedure is to ensure that consumers are charged the correct prices for the items they purchase. The "randomized" and "stratified" sampling procedures are intended for use in routine inspections to determine how well a store is maintaining price accuracy. Nothing in this procedure should be construed or interpreted to redefine any State or local law, or limit any jurisdiction from enforcing any law, regulation, or procedures that relates to the accuracy of advertisements of retail prices, or any other legal requirement.

Section 2. Definitions

2.1. "Area". -- Means an "entire store," a "department," "grouping of shelves or displays," or other "section" of a store as defined by the inspector from which samples are selected for verification. "Non-public" areas of a store are not included (e.g., the area in a pharmacy where controlled drugs are kept or product store rooms).

2.2. "Cents-Off" Representation. -- Means any printed matter consisting of the words "cents-off" or words of similar import placed upon any item, or on a label affixed or adjacent an item, stating or representing by implication that it is offered for sale at a price lower than the ordinary and customary retail selling price (e.g., 15% off, bonus offers, 2 for 1, or 1-cent sales, etc.).

2.3. Direct-Store-Delivery (DSD) Item. -- Means an item delivered to a store, and usually priced, by route salespeople (e.g., milk, beer or soft drinks, bread, and snack foods like potato chips).

2.4. Displays. --

(a) Aisle Stacks or End-of-Aisle Displays. -- Means displays located in freestanding units or attached at the end of or adjacent to a tier of shelves.

(b) Tie-in Displays. -- Means displays of related products at secondary locations in a store (e.g., barbecue sauce on shelves in an aisle and also in the meat department of a food store).

(c) Multiple Displays. -- Means displays of the same product at several locations in a store.

2.5. Hand-held Scanning Device. -- Means a portable device that scans U.P.C. codes that allows for the comparison of the price displayed on a shelf, item, or otherwise advertised, to the price for the item in the point-of-sale database.

Note: These devices either retain a "batch" file of entered prices and identities for later comparison to the database, or operate "on-line" via FM radio to the database. When used for price verification, they shall be used only with the active point-of-sale database. If you use a hand-held scanner, verify all price discrepancies by scanning the item at a checkout register and request a printed receipt to document the price that consumers would be charged.

2.6. Enforcement Levels. --

Note: These recommendations are not intended to modify the enforcement policy of any jurisdiction unless they are adopted by the jurisdiction.

(a) Lower levels of enforcement actions. -- Includes increased inspection frequency, stop-sale or correction orders, warning letters, and other notifications of noncompliance.

(b) Higher levels of enforcement actions. -- Includes issuance of citations, administrative hearings, civil penalties, or prosecution under criminal statutes.

2.7. Inspection Types. --

(a) Automated Inspection. -- Means inspections that are conducted using a hand-held scanning device.

(b) Manual Inspection. -- Means removing items from displays and taking them to a check-out to verify the price (e.g., select the items and either (1) take them to a check-out terminal for scanning or (2) record the product identity, U.P.C. number, and shelf price for each package on an inspection report) and then manually enter the U.P.C. numbers in the register. The manual entries may be made by the official or by a store employee.

2.8. Inspection Frequency. --

These recommendations do not modify the inspection policy of any jurisdiction unless adopted by the jurisdiction.

Inspection control -- after a program has been in place for a period of time and a database is established, procedures can be developed to randomly select stores for inspection, or to focus inspections on stores with low levels of compliance.

(a) Normal Inspection Frequency. -- Means an inspection made at the customary time interval used by an enforcement agency. Inspections may be conducted during normal business hours. Stores under this normal frequency should be inspected on a semi-annual or annual basis.

(b) Increased Inspection Frequency. -- Means an inspection made more often than with the customary time interval, usually as a follow-up on prior violations. Inspections may be conducted during the normal business hours. Stores under this increased frequency should be inspected on a quarterly, bi-monthly, or more frequent basis.

(c) Term of Increased Inspection Frequency. -- Means a store placed on an increased inspection frequency shall remain at that frequency until there are two consecutive inspections with accuracy of 98 percent or higher.

(d) Special Inspection. -- Means an inspection that is made as a follow-up to a prior inspection or to investigate a complaint.

2.9. Inspection Lot. -- Means a group of items available for testing in an "area" or "areas" (See 2.1. "Area")

2.10. Merchandise Group. -- Means a group of products identified under a common heading for inspection purposes only (e.g., "advertised sale" items, "end-of-aisle" items, "direct delivery" items, "cents-off" items, or all the items in the "men's" department in a department store).

2.11. Not-on-File Item. -- Means items not found in the POS database. When found, another item is selected at random (e.g., an item on either side of the one that was not on file) to replace the item in the sample. A "not-on-file" item is not an error unless you determine that the price "charged" is incorrect by conducting a test purchase or by asking the checkout clerk to determine the price by using the store's written or stated policy or procedures. If the price is found to be inconsistent, the error is included in the total.

2.12. Notification of Noncompliance. -- Means any written notice given to a store describing the violations of the law that were found.

2.13. Price Look-Up Code (PLU). -- Means a pricing system where numbers are assigned to items or commodities and the price is stored in a data-base for recall when the numbers are manually entered. PLU codes are used with scales, cash registers, and point-of-sale systems.

2.14. Prices. -- These definitions do not amend or effect the provisions of any law, regulation, or other test procedure.

(a) Misrepresented Price. -- Means the price charged differs from the price at which the item is offered, exposed, or advertised for sale, or that the price is different than the price on the item, shelf label or sign.

(b) Price Charged. -- Means the price charged for an item and either displayed on the automated device or on the receipt issued by the device, whether the item is scanned, or actually purchased, the device is computing or recording while in a training or inspection mode, or by using the hand-held device tied to the point of sale database.

(c) Overcharge. -- Means the price charged for an item is more than the lowest advertised, quoted, posted, or marked price.

(d) Undercharge. -- Means the price charged for an item is less than the lowest advertised, quoted, posted, or marked price.

(e) Intentional Undercharge. -- Undercharges are not counted as errors if the store provides, at the time of inspection, information that confirms the price error was intentional (e.g., an undercharge that occurs when a store lowers a price in a database before they change shelf tags or signs in anticipation of selling the item at a lower price or when a store increases the price of an item, or advertised price, and then increases the price in the database, or when a discounted price is rounded to a lower value).

2.15. Pricing Coordinator. -- Means the individual designated by the store to control and maintain "pricing integrity" in the store though the title will vary with each retailer.

2.16. Pricing Integrity. -- Means ensuring that the computer price file and/or the price charged to consumers

at a cash register is the same price that is marked on the product, in an advertisement, and/or the shelf tag.

2.17. Sample. -- Means the number of items selected for testing from the inspection lot.

2.18. Scanner. -- Means an electronic system that employs a laser bar code reader to retrieve product identity, price and other information stored in computer memory.

2.19. Stock-Keeping Unit (SKU). -- Means a system of product identity and pricing similar to PLUs.

2.20. Store-Coded Item. -- Means the application of U.P.C. codes to items in the store. Scales in the meat, deli and other departments generate U.P.C. labels that include identity and price information that can be read by point-of-sale scanners.

2.21. Stop-Sale Order. -- Means an official document placing off-sale a package or amount of any commodity which is offered or exposed for sale in violation of the law.

2.22. Ticketed Merchandise. -- Means items from which the price must be read from a ticket (or price sticker) and manually keyed into a register.

2.23. Universal Product Code (U.P.C.). -- Means a unique symbol that consists of a machine readable code and human-readable numbers. U.P.C.s are printed on package labels or are applied with tags or labels. U.P.C. codes can be printed for random weight packages by price-computing scales. U.P.C. symbols must meet the standards established by the Uniform Code Council (UCC) in order for them to "scan" accurately. The size and clarity of the print and clear area surrounding the symbol are a few of the factors that affect accuracy. The UCC issues codes and answers technical questions, contact the Uniform Code Council, Inc., 8163 Old Yankee Rd, Suite J, Dayton, Ohio, 45458. Tel: 513-435-3870

Section 3. Test Notes

3.1. Safety and Health. -- Practice safe work habits to avoid personal injuries or property damage. Be aware of and follow all safety or sanitation rules at the inspection site. Handle perishable, dairy, or frozen products properly to avoid damage (e.g., avoid defrosting frozen foods or allowing dairy products to warm to room temperature which could result in spoilage).

3.2. Confidentiality of Findings. -- Inspection findings should only be discussed with an authorized store representative and only released in accordance with applicable public records laws.

Section 4. Materials and Equipment

The following materials and equipment are recommended for use in conducting the inspections in this procedure:

- Inspection Report
- Copy of laws or regulations
- Hand-held counter or Price Verification Tally Sheets
- 1 lb (or 1 kg) test standard
- Merchandise cart (if required and available)

Other equipment and materials provided by the store when available:

- Current newspaper advertisement or store sales brochures
- Hand-Held Scanning Device(s). Stores are not required to have this equipment or to make it available for your use. However, many stores use this equipment to maintain price integrity and on request may make it available for your use.

Section 5. Pre-Inspection Tasks

Prior to conducting an inspection, it is recommended that you contact the store management, identify yourself, and explain the purpose of your visit. Determine if there are any health, sanitation, or safety rules. If requested, provide information on the law or the inspection procedure.

Note: When verifying manual price entries or conducting test purchases, store management is not typically notified of the test until the items have been totaled and the transaction completed.

- (a) Notify store representatives that they are invited to participate in the inspection.
- (b) If the store makes a hand-held scanning device available for use, request instruction on how to operate it properly. It is acceptable for the "pricing coordinator" to operate the scanning device and participate in the inspection.
- (c) If you use the manual inspection procedure, advise the store representative that you will return the merchandise to its display location unless the store representative wants

to restock the items, which is acceptable. Determine which checkout location to use. Arrange to have the register set so that the items you verify are not included in sales records.

(d) Conduct inspections in a manner that does not disrupt normal business activities.

Section 6. Inspection

Perform the following inspections:

6.1. Position of Equipment. -- Determine if customer indications on point-of-sale systems meet NIST Handbook 44, General Code, User Requirement, 3.3 Position of Equipment. - A device equipped with a primary indication element and used in direct sales shall be so positioned that its indications may be accurately read and the weighing and measuring operation may be observed from some "reasonable" customer position.

NIST Handbook 44 defines "point-of-sale system" as "an assembly of elements including a weighing element, indicating element, and a recording element (and may be equipped with a scanner) used to complete a direct sale transaction."

Note: The importance of consumer access to the cash register display of product information and price cannot be overstated. If consumers cannot verify prices as the items are being scanned, they must wait until the transaction is completed (e.g., they must pay by cash or check) before they receive the receipt so they can confirm the prices charged for the items.

6.2. Other. --

(a) If you use a cash register, verify the accuracy and legibility of information provided on register receipts.

(b) Conduct inspections to enforce local requirements if your jurisdiction has specific laws or regulations relating to price marking, shelf labels, or unit pricing.

Section 7. Test Procedures

These procedures shall be used to conduct inspections in any type of store, whether the store uses scanners or automated price look-up registers, or where a clerk manually enters prices.

7.1. Application of Sampling Plans. --

(a) For Normal or Increased Frequency Inspections - follow the procedures referred to in Columns 1, 2, and 3, in Table 1. Samples, Sample Collection, and Accuracy Requirements.

(b) For Special Inspections - Use the test procedures in 7.2. or 7.4., "Procedure for Test Purchases and for Verifying Manually Entered Prices."

7.2. Table 1. Samples, Sample Collection, and Accuracy Requirements

7.2.1. How to use the table. --

(a) Look up in Column 1 the type of store you are inspecting and select the appropriate sample size from Column 2. Then, refer to Column 3 for the type of sample collection plan to use.

(b) Follow the single-stage or two-stage sampling plans to conduct the inspection and collect the samples using either the "randomized" or "stratified" sample collection procedures described in 7.3. or the procedure in 7.4.

(c) Apply the accuracy requirements for the appropriate sample size in Column 4.

7.2.2. Samples. -- Refer to Column 2 in Table 1 to determine how many items to select for the store type and whether to use the single-stage or two-stage sampling plan. You may use either the:

(a) **Two-Stage Sample.** -- A two-stage sample is used to save time. If the sample (usually one-half the total sample size) taken in the first-stage meets the accuracy requirements specified in Column 4 in Table 1, the inspection is complete. However, if the errors in the first-stage sample fall within the limits set in Column 4, the second-stage of the sample is taken,

or the:

(b) **Single-Stage Sample.** -- A single-stage sample is typically used for, but is not limited to, stores where a hand-held scanner device is available for the inspection.

7.3. Sample Collection Procedures (for use with either manual or automated inspection procedures). -- These sample collection procedures can be used to conduct either manual or automated inspections with a single-stage or two-stage sample. That is, you can either use a hand-held scanning device to verify the price of an item (automated), or you can remove the items from display and take them to a checkout location to verify the price of the item (manual) regardless of which sample collection procedure used.

No sample collection procedure is ideal for all retail store arrangements. You can modify the procedure to fit each store, but should adhere to the sample size and sample collection procedures described in Table 1. When using any of the procedures, test the store as a whole unit by taking samples from all parts of the store, or divide the store into "areas" and select samples from several "areas" (e.g., at least 10 areas, or one-third or one-half of the "areas").

Table 1. Samples, Sample Collection, and Accuracy Requirements

Column 1. Type of Store	Column 2. Samples	Column 3. Sample Collection Procedures	Column 4. Accuracy Requirements (See Section 10)
Convenience or Any Other Small Retail Store Note: For this procedure a small store is typically one with 3 or less checkout registers	Two-Stage Sample First Stage = 25 items Second Stage = 25 items or more Total = 50 items or more or Single-Stage Sample 50 items or more	Use Randomized Sample Collection in 7.3.1 or the Stratified Sample Collection in 7.3.2. and Use the Manual or Automated Inspection Procedures	If 1 error is found in the 25 item sample, test an additional 25 items. If more than 1 error is found in the 50 item sample, the store fails Note: If more than 1 error is found in the first 25 items the store fails
All Other Retail Stores	Two-Stage Sample First Stage = 50 items Second Stage = 50 items or more Total = 100 items or more	Note: test the store as a whole unit by taking samples from all "areas" of the store, or divide the store into "areas" and select samples from several "areas" (e.g., at least 10 or one-third of the "areas")	If 1 error is found in the 50 item sample, the store passes. If 2 errors are found in the 50 item sample, test an additional 50 items. If more than 2 errors are found in the 100 item sample, the store fails. Note: If more than 2 errors are found in either stage the store fails.
	Single-Stage Sample 100 or more items		If more than 2 errors are found in the 100 item sample the store fails, or If more than 100 items are sampled, the error rate shall not exceed 2 percent.

Note 1: These sampling procedures allow flexibility in sample collection for use in any type or size of store. You can take any of several different approaches and select a number of "areas" to sample using the sample sizes in Table 1. For example; to perform a 100-item inspection in a department store with 20 "areas," you can either verify 5 items in each of the "areas," 10 items in 10 of the "areas," or 20 items from 5 "areas."

Note 2: The sample sizes used for routine inspections in this procedure should not be used to estimate the overall accuracy of prices in a store.

Note 3: In some stores price reductions are not programmed into the point of sale system. Instead, discounts are manually entered by a sales clerk; however, the sales clerks should have a means to identify a sale item. When conducting normal inspections, you should verify the price of the sale items by allowing the sales clerk to determine the price of the item using the store's customary procedures. This will ensure that the customer receives the correct price regardless of the location where the checkout occurs.

7.3.1. Randomized Sample Collection. -- In "randomized" sample collection, all of the items in an "area" have an equal chance of being included in the sample. This test procedure has several benefits, including: (1) more effective coverage and simpler to do because you select items by count following a systematic pattern throughout the store, and (2) randomized sampling ensuring a wider range of items are verified, which increases scrutiny, hence confidence in the results. With most samples, several items will be verified in each "area" of the store. Since store sizes differ, this number will vary, but you should take samples from a wide variety of items (and merchandise groups) from locations throughout the store or "area."

The steps of the randomized sampling collection procedure are:

(a) Count the number of "areas" in the store which have products to be verified:

(1) Stand-alone counters and displays or whole departments (e.g., bakery or seafood, or "mens clothing" or "sporting goods" department, etc.) are considered and counted as individual "areas" to be sampled.

(2) End-of-aisle displays may be considered as a single, distinct "area" and verified separately or included as part of either side of an aisle.

(b) The sample size (e.g., 100 items) is divided by the number of "areas" to determine the number of items to be sampled from each "area". Depending on the number of areas in the store, you may calculate a fractional number of items per area. In this case, round off the sample size and select one or two additional items from an "area" to complete the full sample size of 100 items.

Example 1. Illustrations of the Randomized Sampling Procedure

(a) Figure 1 illustrates how the randomized sampling procedures are used in a food store. This example is based on a 100-item sample. To simplify the selection process, simply divide the store into 4 major "areas" and select samples as follows:

- Select 5 items from all of the shelves and displays in the produce section which are grouped as a single "area," and
- Select 85 items by choosing 5 items from either side of the 13 aisles, and
- Select 5 items from the counters along the back of the store, and
- Select 5 items from the deli-bakery and the cash register areas which are grouped as a single "area."

(b) Figures 2 and 3 illustrate how the randomized sampling procedures may be used in any store. The examples are based on a 100 item sample in stores that have a total of 30 "areas" to sample. The procedure allows the flexibility needed to adjust the sample to fit the store layout. To simplify the selection process the stand-alone displays can be grouped together as an "area" to be sampled.

The following breakdown of "areas" is illustrated in Figure 2 the same approach is used in Figure 3. Figure 4 provides a illustration of sampling 100 items by selecting 20 items from 5 different areas in a department store.

- 1 - All of the shelves and displays in the produce section are grouped as a single "area."
- 28 - The 13 aisles (26 rows of shelves), the counters along the back of the store and the cash register areas are counted as "areas."
- 1 - The "end-of-aisle" displays at the front and back of the store are grouped as a single "area."

Total "areas" - 30

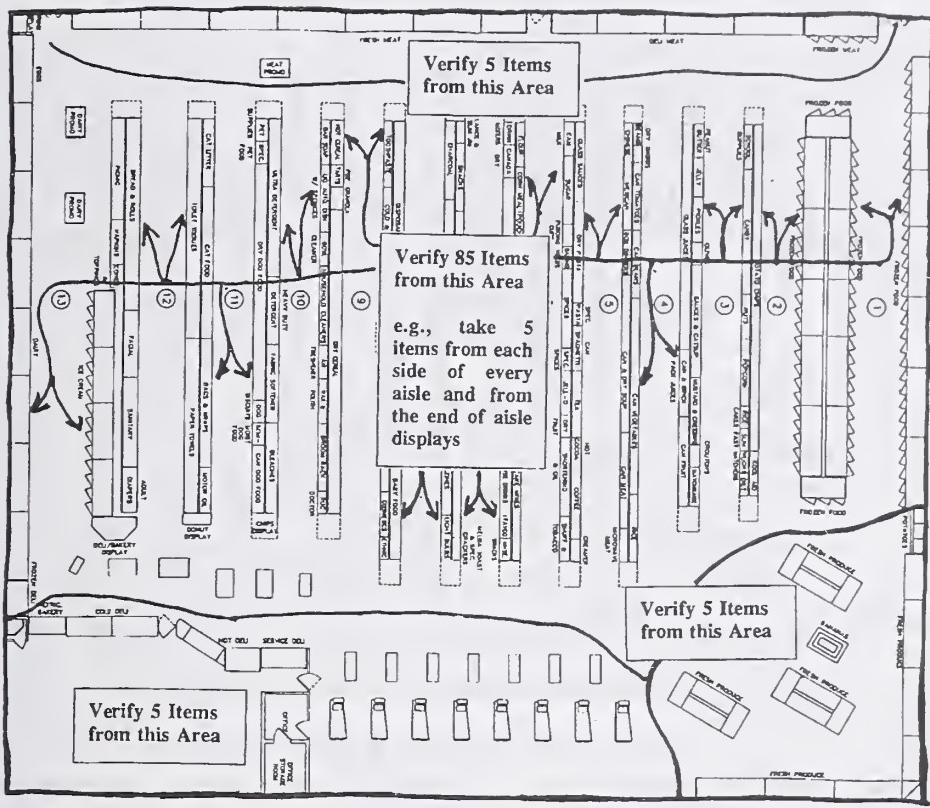


Figure 1. Illustration of the Randomized Sampling Procedure

a. If you want to select samples from the entire store, divide 100 by 30 to calculate how many "samples" to take from each "area." In this example, $100 \div 30 = 3.3$ items per area. Rounding down to 3 items, take a total of 90 samples from the different "areas" and select 4 items in 10 of the "areas" to obtain a sample of 100 items.

b. If you round up to 4 items per area, you take a total of 120 samples, or

c. You may select 10 items from 10 "areas."

(c) Start in any "area" in the store at any shelf, or rack or display, (top or bottom, front or back, or anywhere on a circular rack or display). Begin with the first (or second or third) item and count either 5, 10, or 15 items along the shelf (varying the number of items counted depending on how many items are available on the shelf) or along the aisle. Select the 5th, 10th, or 15th item as appropriate (See Figures 5, 6, and 7). Only select one item from each brand or product (if they are the same price) from a display that has two or more items of the same product, size and price displayed side by side. You can change the number of items you count off as often as necessary during the inspection.

(d) Either verify the price with a hand-held scanning device or take the item (along with the other items you select) to the check-out location to verify the price, keeping count of the items using a hand counter or tally sheet. If an item is incorrect, record its name, description, and price along with other information (e.g., whether the product is on sale, aisle location so that you can easily find the items again to verify the error, etc.).

(e) From the first item sampled, move down (or up) one shelf to the item most directly below (or above) and count 5, 10, or 15 items in the same direction and sample the 5th, 10th or 15th items, as appropriate. After the number of items to be verified in each "area" have been selected, go to the next "area" and start on the next shelf (either down or up) from where the previous sample was selected, count 5, 10, or 15 items, and select the appropriate item using the count system until the required number of samples is selected. If you have sampled an item on the bottom (or top) shelf and have more items to test in the "area," simply go up (or down) one shelf. This will create a "zigzag" trail up and down the display.

Note: Randomness can be increased by starting on different shelves or at the midpoint or rear of an aisle

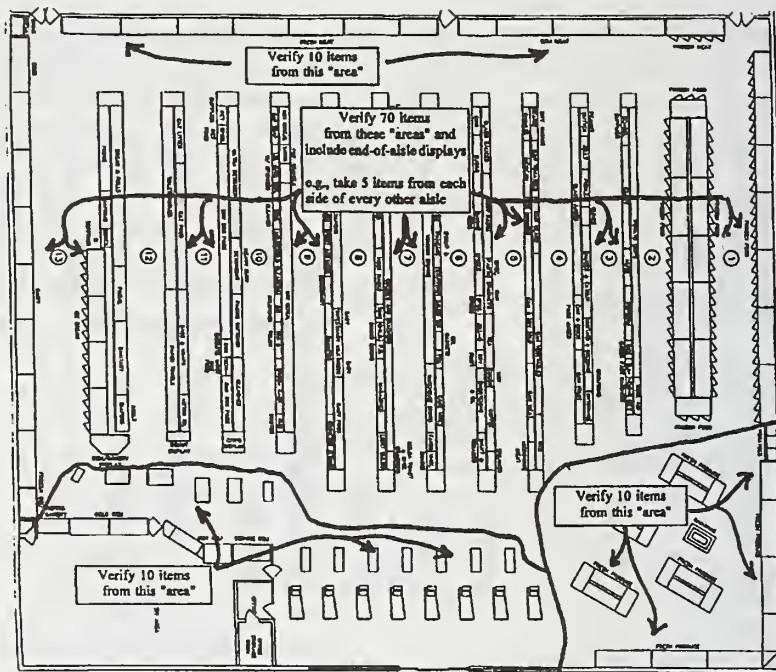


Figure 2. Illustration of the Randomized Sampling Procedure

during an inspection, or by starting at different locations in a store on subsequent inspections. Always start at a different location on subsequent inspections of a store. To maintain "randomness," do not search for obvious pricing errors. If you see pricing errors, have them corrected. The sample should not include more than one of the same item from the same display. If an item is out of stock, select the next item.

(f) This procedure is repeated for all "areas" until you complete the sample. (See Notes Below)

Note 1: Include at least 5-10 Price Look Up (PLU) and store-coded items in the samples. In food stores, these items do not usually have to be removed from the produce, bulk foods section, or deli display for use in this procedure. You can use a hand-held scanner or record the identity and item price designated at the product sales display of the items from the different department (produce, bakery, deli), if available, for price comparison through either the PLU programmed in the department's scale or at the point-of-sale system. Have the PLU entered in the scale (See Note 2) or point-of-sale system (or have "store-coded" items scanned) and record the price, comparing it with the displayed sale price. Record any errors (See Note 3). When checking "store-coded" items from the meat or other departments, remember that a "U.P.C. symbol" on a random weight label is read by a scanner to obtain the total price and identity. The price is not stored in the point-of-sale database, but in the memory of the prepackaging scale.

Note 2: Some scales or point-of-sale systems do not display or record the unit price associated with the PLU unless a weight is on the scale. For these types of devices, place a one-pound standard (or 1 kg) on the scale load-receiving element. Some systems automatically deduct tare, so check to make sure that this does not affect the price indication.

Note 3: When you manually enter PLU codes and find errors, reenter the PLU number to ensure that the error was not caused by a keying mistake or that the item was not identified accurately.

7.3.2. Stratified Sample Collection. -- Stratified sample collection (i.e., selecting samples from specific merchandise groups) of items on sale, specials, seasonal items, or items on end-of-aisle displays) is typically used (e.g., if a store has failed an inspection based on the randomized sample collection procedures) to focus on specific merchandise groups that appear to have more errors than others (e.g., you find that many of the errors found in the randomized sample were in "advertised specials" or with "discontinued items"). You can also combine sample collection procedures by using a "randomized/stratified" approach. The "stratified" approach may be used the first time you inspect a store, in stores that have just implemented scanning, in stores that have high error rates on particular groups of items in past inspections, or in responding to consumer complaints involving a particular group of items.

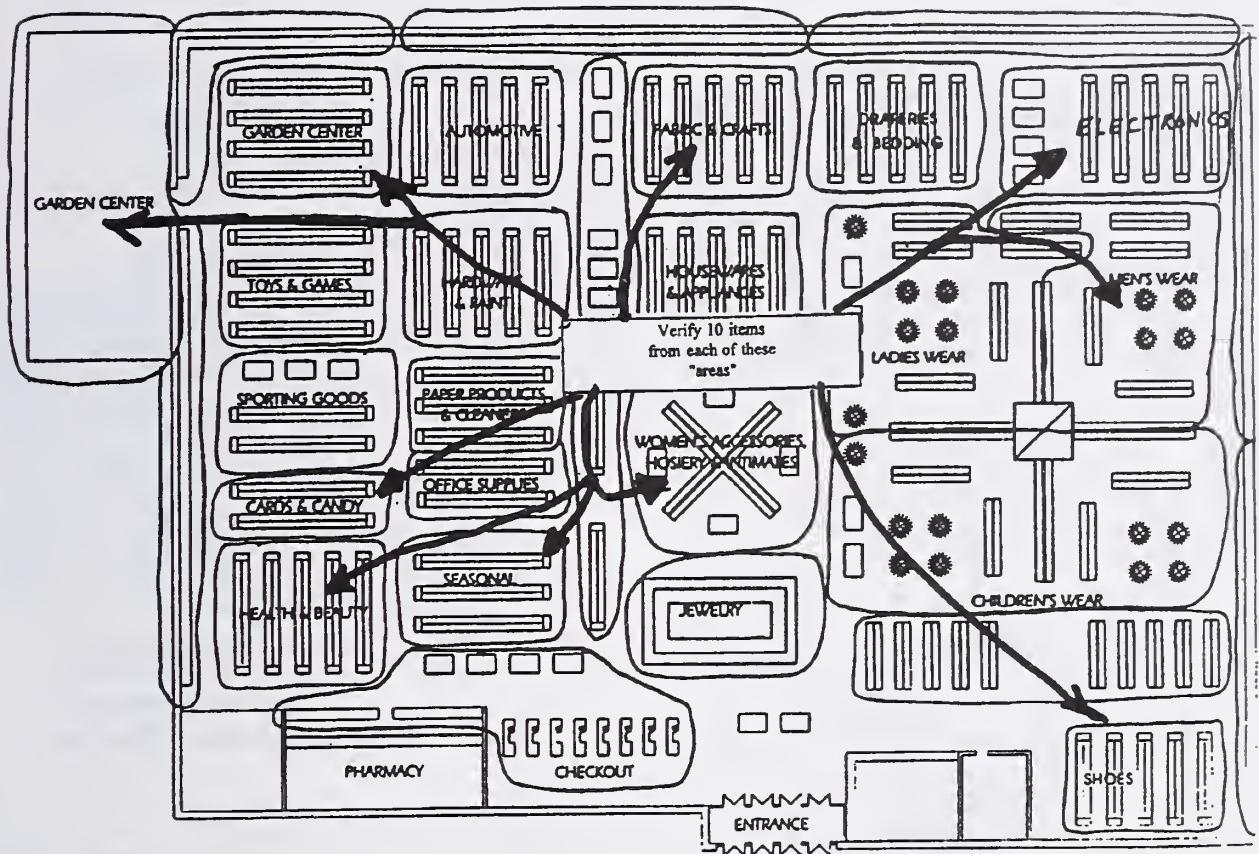


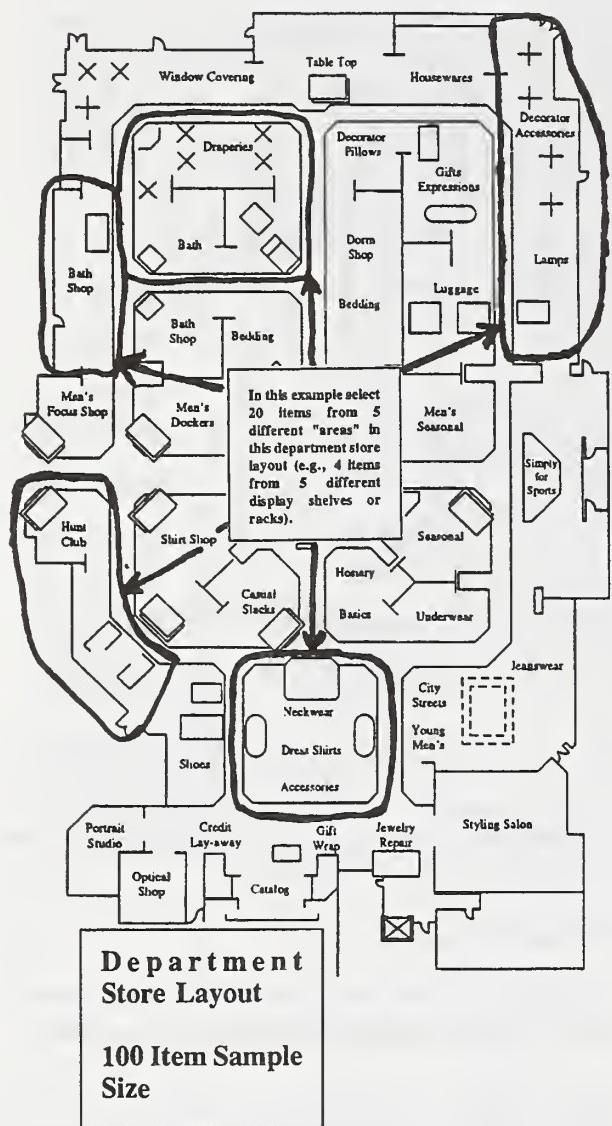
Figure 3. "Randomized Sample Collection" Using Count.

For stratified sample collection, items are randomly selected from different "merchandise groups" in a store. They are tested in the first-stage of the two-stage manual sampling plan to determine if (1) any group has more errors than any other and (2) the sample taken in the first stage meets accuracy requirements. This method should be modified depending on the marketing practices of the store in which it is used (e.g., if you are in a department store there may be fewer groups to sample from, or the list provided below may not include the types of groups typically encountered in a hardware superstore). However, the next example will show how to conduct a stratified sample and how it is used, but it should not be the sole basis for sample collection because a specific list of items does not look at the store as a whole. Focusing on specific merchandise groups takes time, but this may be necessary when investigating a complaint or following up on a prior noncompliance. Select only one item from each brand or product from a display that has two or more items of the same product, size and price displayed side by side if they are the same price.

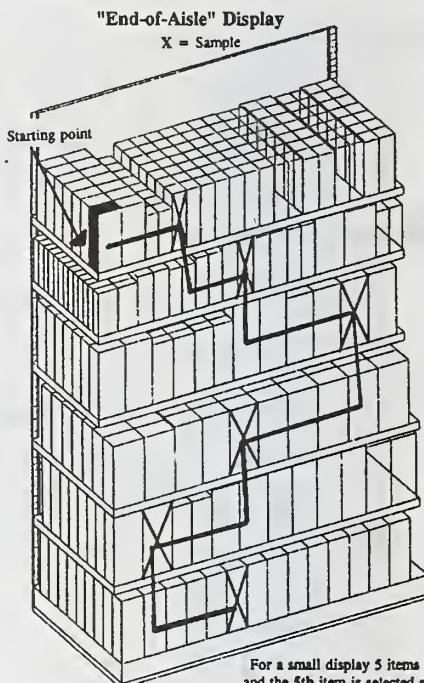
Example 2. Two-Stage Manual Inspection using the Stratified Sampling Procedure

Sample Size: In this example a large food store is inspected using a two-stage sampling plan (50 items/100 total items). The inspection begins with an initial sample of 50 items (see Column 1. Type of Store for "All Other Retail Stores" and Column 2. Sample Sizes in Table 1).

Stratified Sample Collection - Select 50 items from the merchandise groups listed below (provided as examples only; stores may have other groups that should be included.) This procedure allows you to focus on specific merchandise groups to determine if errors are occurring in any of the groups where errors are thought to occur more frequently (e.g., sale and direct delivery items).



RANDOMIZED SAMPLE COLLECTION



For a small display 5 items are counted and the 5th item is selected as the sample

6 Samples were tested in this "area."

Figure 5. Randomized Sample Collection.

If there is an insufficient number of items in any merchandise group, or if the group of items is not available, increase the number of "randomized" items selected from the overall inspection lot to obtain a total 50 items. As marketing practices evolve, these groups may change as well. You can substitute "other" or new merchandise groups for any of those listed below (e.g., you may have identified errors in the "health and beauty aids" section or on "manager specials" during a previous inspection, so samples from these groups may be substituted for any of the groups listed below). Model "Price Verification Tally Sheets" in Appendix A are provided for your use with the test procedures to keep track of the number of items selected.

Figure 4.

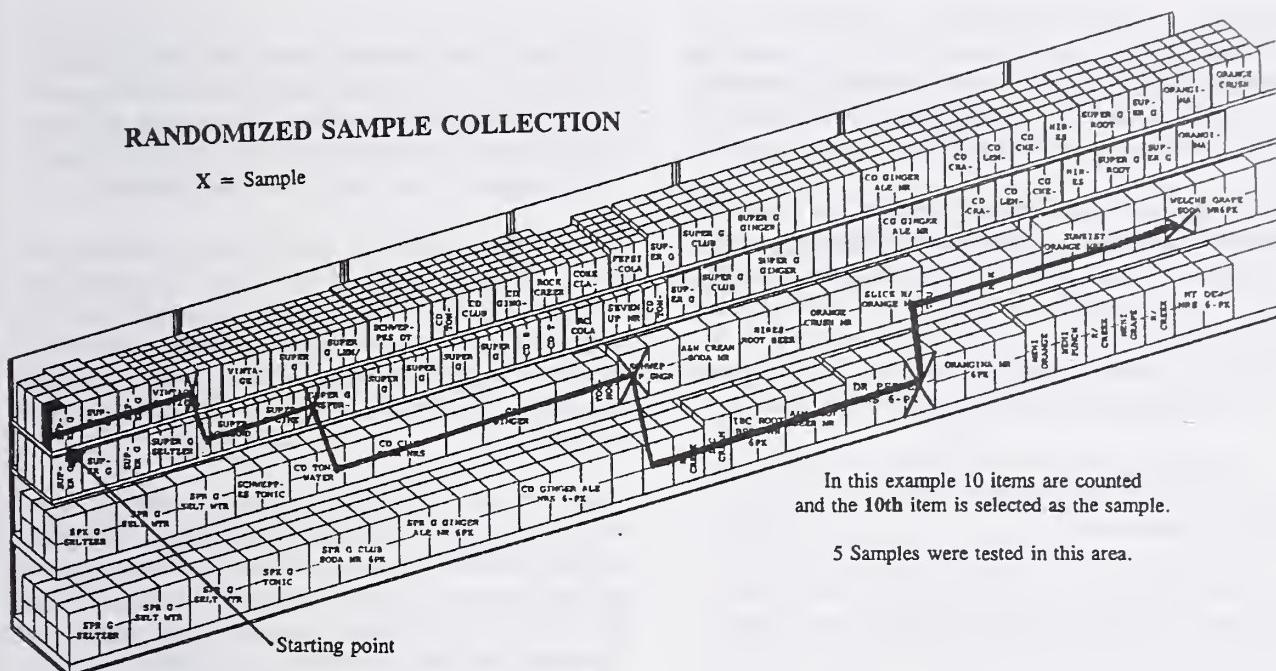


Figure 6.

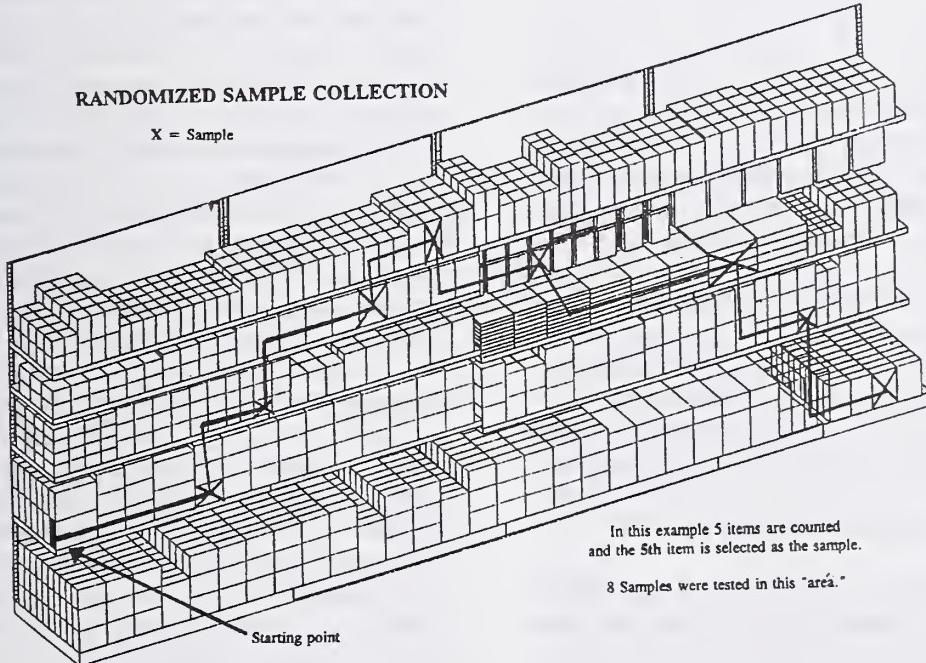


Figure 7.

First-Stage: 50 items. Use the "randomized" sample collection procedures described in 7.3.1 to select the following items. These sample collection procedures simplify the inspection process and ensure that samples are collected as randomly as possible.

- 25 "Regular Priced" items. Select 1 or 2 items at random from different shelves on each "area" or limit your sampling to shelves in one-half the "areas," in the store, and
 - 25 Items. Select a total of 25 items. Include several items from any of the following merchandise groups:
 - "Direct-Store-Delivery (DSD)" items. If the store allows vendors to price DSD items, include those items in the sample.
 - "End-of-Aisle" or "Tie-In-Display" items. This group can include both regular and sale priced items.
 - "Advertised Sale" items. Use the store's sales brochure or newspaper advertisements to identify sale items.
 - "Special" items. This includes any item with a reduced price (e.g., items on "special" including "cents-off" or "percentage off" items, 2-for-the-price-of-1 specials, manager and in-store specials, or discontinued items). Items typically discounted on a percentage basis included a manufacturer's product line, greeting cards, magazines or books.
 - "PLU" items. This includes both regular and sale priced items offered in the produce, bakery, or bulk food departments and over scales at the direct sale counters. For direct service departments (e.g., produce, deli, specialty meats, etc.), select products at random (include some sale or special prices) and enter the code in the scale^(See Note 1) to verify that the coded price matches the advertised price^(See Note 2).
 - "Store-coded" items. This includes items offered in the produce, bakery, or meat departments that have labels with the U.P.C. symbol generated by scales and printers in the store. For store-coded items, scan the item and determine if the total price and identity on the label are accurately read by the point-of-sale system. When checking "store-coded" items from the meat or other departments, remember that a "U.P.C. symbol" on a random weight label is read by a scanner to obtain the total price and identity. The price is not stored in the point-of-sale database.

- "Other" items. This category is included to provide flexibility in the selecting a sample so that "seasonal" items, or products unique to the store or local market, can be included. Both regular and sale priced items can be included in this category.

Note 1: Some scales or point-of-sale systems do not display or record the unit price associated with the PLU unless weight is on the scale. For these devices, a one-pound (or 1 kg) standard is placed on the scale load receiving element. Some systems automatically deduct tare, so make sure that this does not affect the price indication.

Note 2: When a not-on-file item is found, another item is selected at random to replace it in the sample. A "not-on-file" item is not an error unless you determine (e.g., by conducting a test purchase or by asking the checkout clerk to determine the price of the item using the store's customary procedures) that the price "charged" for the item is incorrect. If the price determined is not correct, the error is included in the total.

Record a brief identification of the item on an inspection report (e.g., a brief description, item number, shelf or advertised price and aisle location. The aisle location makes it easy to find the product if errors are found and in reshelfing the items.) As the items are selected, use the "Price Verification Tally Sheet," or other means, to keep track of the number of items collected (See Appendix A - Model Forms. The "Model Price Verification Reports" in this proposal were developed with the assumption that it is only necessary to record information of items found with price errors, not all items verified. This reduces paperwork and saves time).

Either use a hand-held scanning device or take the items to a cash register, verify the prices by scanning the items or entering a PLU code into the register and printing a receipt. The prices "charged" at the register are then compared to the advertised price of each item. For large or perishable items, you can record the identity, U.P.C. Code, location, and price and manually enter the U.P.C. number into the register to verify the price. However, this method is subject to recording and key entry errors.

Evaluation of Results on First-Stage:

See Section 9 for guidance on which errors are considered violations: One error is permitted in a 50-item sample. If only one error is found and verified, the store passes; if 3 items are found in error in the first 50 items, the store fails and the inspection is complete.

If two errors are found, collect 50 more items using the randomized sampling procedures and verify a total of 100 items. If errors were found in any specific merchandise group (or groups) of items (e.g., direct-store-delivery items, PLU Codes, or specials), the additional 50 items should include items from those merchandise groups.

Accuracy

Refer to Column 4 in Table 1. The required accuracy is 98 percent on the 100-item sample (that is, at most two errors are permitted in a 100-item sample). If more than two errors are found and verified, the store does not meet the accuracy requirement.

Note: The "randomized" and "stratified" sample collection procedures in this section are intended for use in routine inspections to determine how a store is maintaining price accuracy on all of the items it offers for sale. If you use these sampling procedures in routine inspections and uncover a significant number of errors in a particular merchandise group (e.g., a significant number of the pricing errors are found with "advertised sale item" items), a randomized sample can be collected entirely within this specific merchandise group. For example: if the error rate for "advertised specials" is higher than the rate for regular priced items, a more focused inquiry to determine if there is a significant error rate in this merchandise group may be justified. If several "advertised specials" have been the subject of consumer complaints, or if they are repeatedly found to be in error during routine inspections, then a randomized sample can be limited to the "advertised specials" merchandise group. In this case, a randomized sample (e.g., a 50/100 item two-stage approach) is taken from all of the "advertised sale items" offered for sale in the store or in a specific "area." The results of this sample are applicable only to the "advertised specials" group and not to all items in the store.

7.4. Procedures for Test Purchases, Investigation of Consumer Complaints, and for Verification of Manually Entered Prices

7.4.1. Procedure. --

This procedure may be used to (1) investigate consumer complaints, (2) determine if a store has corrected a pricing error after being notified that an error occurred, or (3) determine if manually keyed-in prices or PLU codes are accurate.

Note: When verifying manual price entries, store management is not typically notified of the test until the items have been totaled and the transaction completed.

(a) Do not make the clerk aware that the test purchase procedure is being conducted. Do not ask questions concerning any errors that you observe or offer any information if asked the price of an item, in cases where the item price is illegible, or the item is not on file.

(b) Use the "randomized" sampling procedures to select a sample of 10-50 items that includes regular and sale priced items, PLU items, and advertised specials from various "areas." It is acceptable to purchase only one or just a few items if you are investigating a complaint on a specific item. Record the name and identity of the product, as well as the labeled or advertised price, for each item.

(c) Proceed through a check-out as if you were a customer and pay for the purchase. Obtain the original sales receipt and compare the price charged with the labeled or advertised price for each item. Record the time of day, lane number, and the identity of the checker. Before leaving the store, determine if any errors have occurred. Identify yourself to the store management and inform them that a test purchase was conducted and report the results. (In many instances the store will credit back all of the items and refund the test purchase money.) Record the information on the test report form and determine the cause of the error (e.g., was it operator error, mislabeling of the item, or incorrect price sign?).

7.4.2. Alternative Procedure - Consumer Complaints. -- Complaints can be investigated by using any of the test procedures described above or by only verifying the price of the item or items subject to the complaint. If the complaint is valid, you can limit your inspection to the items described in the complaint or you may conduct a complete inspection.

7.4.3. Evaluation of Results. -- The errors for items verified using these procedures should be evaluated according to Sections 9 and 10.

Section 8. Documentation of Findings

Several examples of Model Price Verification Reports are contained in Appendix A. These forms were developed so that you only have to record the items found with price errors.

(a) Record errors and provide information on the cause, if determined. Indicate if the errors are considered to be violations, if stop-sale orders were issued, or if the violation was corrected.

- (b) Notices of violations or other significant comments should always be included on the test form (e.g., warnings or violations ordered corrected).
- (c) Cash register receipts on verified items should be retained and attached to the inspection report as evidence.
- (d) Printed advertisements and sales flyers should be retained and attached to the inspection report whenever errors are found in these categories.

Section 9. Evaluation of Inspection Results

9.1. Definition of Errors. -- An error found to result from of any of the following causes **should not** be considered a violation for enforcement purposes:

- (a) Any intentional undercharge that is found within 24 hours of the time that the price was changed in the store's database (or shelf tag or advertised price), if documentation or confirmation of the date and time of the price change is provided at the time of the inspection.
- (b) Any error caused by a mistake made in any kind of advertisement (e.g., newspaper, printed brochure, or radio or television advertisement) if the store has placed a notice adjacent to the item indicating that a mistake occurred in the advertisement.
- (c) Any error obviously caused by a price label that is missing or has fallen off the shelf, or if the item or the price label or sign has obviously been relocated by an unauthorized person.
- (d) A "not-on-file" item is not an error unless you determine that the price "charged" for the item is incorrect (e.g., by conducting a test purchase or by asking the checkout clerk to determine the price of the item using the store's documented or customary procedures. If the determined price is incorrect, it is considered an error.)

Note: It is recommended that you work with the store representative to identify the cause of any error and note the problem/cause on the report. This may not change your findings, but will help to identify problems related to staff errors, failure to follow through on established store pricing procedures, data entry errors, or failure of management to provide correct written data, etc. The supporting information will help with enforcement decisions as well as in-house monitoring of the pricing of products.

9.2. Computing Sample Errors. -- The following formulas are used to determine sample error and the overcharge to undercharge ratio:

- (a) Adjust the total sample by subtracting any items or errors specified in 9.1.
- (b) To compute the sample error, divide the number of errors by the total sample size to obtain the error in percent.

For example: a sample of 100 items is verified; 3 overcharges and 1 undercharge are found for a total of 4 errors.

$$4 \div 100 = 4 \text{ percent sample error.}$$

- (c) To compute the ratio of overcharges to undercharges (used on large samples and in follow-up activities) total the overcharges/undercharges and compare the numbers:

$$3 \text{ overcharges} / 1 \text{ undercharge} = \text{a 3 to 1 ratio}$$

Section 10. Accuracy Requirements

10.1. Accuracy Requirements. -- Accuracy information, based on a percentage of errors found in a sample and the ratio of overcharges to undercharges, provides useful criteria for evaluating the "pricing integrity" of the store. Both overcharges and undercharges should be considered errors in taking lower level enforcement actions since (1) either type of error misrepresents the price of the item; and (2) the occurrence of any error in a randomized sample may indicate poor pricing practices that would result in errors on other items where additional items were sampled. For higher levels of enforcement only overcharges are considered.

10.2. Accuracy. -- See Column 4 in Table 1. The accuracy requirement for a sample must be 98 percent or higher to "pass" a single inspection.

10.3. Ratio of Overcharges to Undercharges. - On large sample sizes the overcharges should not exceed the undercharges. A high rate of overcharges to undercharges (2 to 1, or 3 to 1) may indicate systematic problems with a store's pricing practices.

Note: As the history of store compliance develops, the number of overcharges and undercharges can be evaluated to determine if systematic errors or other problems exist. This ratio should be maintained when at least 10 errors are found over several inspections, or in a single large sample size (e.g., the results of several 100 item

inspections collected over a period of time or if 1,000 items are sampled in one inspection.)

Table 2. Price Errors - This table shows the percentage of errors in different sample sizes:

Price Errors	Percentage of Errors					
	Sample Size					
	25	50	100	150	200	300
1	4%	2%	1%	0.67%	0.50%	0.33%
2	8%	4%	2%	1.33%	1.00%	0.67%
3	12%	6%	3%	2.00%	1.50%	1.00%
4	16%	8%	4%	2.67%	2.00%	1.33%
5	20%	10%	5%	3.33%	2.50%	1.67%
6	24%	12%	6%	4.00%	3.00%	2.00%
7	28%	14%	7%	4.67%	3.50%	2.33%
8	32%	16%	8%	5.33%	4.00%	2.67%
9	36%	18%	9%	6.00%	4.50%	3.00%
10	40%	20%	10%	6.67%	5.00%	3.33%

Note: Random errors are expected in pricing, but the ratio of overcharges to undercharges will rarely be exactly one to one (e.g., of 10 errors, 5 overcharges and 5 undercharges); the ratio would likely vary both ways over several inspections. If a store has more overcharges than undercharges (e.g., 2 to 1, or 3 to 1), it may indicate that the store is not following good pricing practices, but enough errors must be present in order to make this determination. (Consider the example of 12 pricing errors consisting of 8 overcharges and 4 undercharges: the ratio of overcharges to undercharges is 2 to 1. Similarly, 10 pricing errors consisting of 6 overcharges and 4 undercharges corresponds to a ratio of 1.5 to 1; since all decimal values are truncated to whole numbers, 1.5 is truncated to 1, and the ratio becomes 1 to 1.)

The one-to-one ratio should be applied to any sample size if at least 10 errors are present. For example, if 1,000 items are verified and 10 items are found in error, the sample has an accuracy of 99 percent. However, if 9 of the 10 errors are overcharges (i.e., a ratio of 9 overcharges to 1 undercharge), the store should be considered to have poor pricing practices or other problems; if 100 items are verified and a 90 percent accuracy is found, 10 items in error not meeting the overcharge to undercharge ratio can be used as evidence of poor pricing practices in enforcement action.

Section 11. Enforcement Procedures

11.1. Enforcement Steps. --

- (a) Compliance is based on the accuracy found on a sample collected according to this procedure.
- (b) Errors should be corrected immediately, or (if the correction cannot be made immediately) a stop-sale order issued before you leave the business. If the errors are not corrected in your presence, a follow-up inspection can be made later in the day or the following day to determine if the store corrected the error. If a store fails to correct the error by that time, higher level enforcement action should be taken.
- (c) Enforcement action for large monetary errors on individual items, confirmed overcharges on items verified in response to complaints, or errors found on follow-up inspection of items ordered corrected, should be taken independently from any sample, giving consideration to the magnitude of the violation, corrective action by the establishment, and any other relevant information. Action may be initiated at any time in the inspection process based on the facts of the individual case.
- (d) Overcharges and undercharges are used to determine lower levels of enforcement actions, but higher levels of enforcement action (e.g., fines or penalties) are taken only on the overcharges found in the sample (e.g., when overcharges exceed 2% in a sample).

Note: Many computer systems do not allow for the immediate correction of errors in the database. Downloading information throughout the day may not be possible. Therefore, for the purposes of this section, "immediate" correction of errors may entail the removal or correction of problem signs, manually changing marked prices, or communicating notice of the corrected price to all applicable stores through facsimile, e-mail or any other appropriate medium which ensures that consumers are charged the correct price.

11.2. Model Enforcement Levels. --

These recommendations do not modify the enforcement policy of any jurisdiction unless they are adopted by the jurisdiction.

- (a) **Ninety-Eight Percent or Higher.** -- If price accuracy is 98 percent or higher on a sample of 50 or more items, and overcharges do not exceed undercharges on sample sizes of 100 or more items, and the store is on a normal inspection frequency:

- (1) A notice of noncompliance is issued on violations, and the store is maintained on a normal inspection frequency.
- (2) If the store is on increased inspection frequency, it remains on this frequency until inspection results conform to Terms of Increased Inspection Frequency.
- (b) **Less Than 98 Percent.** -- If price accuracy is less than 98 percent on a sample of at least 50 items (and the overcharges do not exceed undercharges on large sample sizes) and the store is on normal inspection frequency:
- (1) A notice of noncompliance is issued, and the store placed on an increased inspection frequency.
- (2) A second inspection should be conducted within 30 business days. If the price accuracy is not 98 percent or higher, a warning is issued.
- (3) A third inspection should be made within 60 business days. If the price accuracy is less than 98 percent, higher level enforcement action is taken if the overcharges are more than 2 percent.
- If the store is on increased inspection frequency, a warning should be issued and the store reinspected within 30 business days. If price accuracy is less than 98 percent, higher levels of enforcement action should be taken if overcharges are more than 2 percent.
- Examples for the 100-item sample size:
- If 100 items are verified and 3 overcharges are found in the sample, the error rate is 3 percent. In this example higher levels of enforcement action should be taken.
 - If 100 items are verified and 3 overcharges and 2 undercharges are found, the error rate on the sample is 5 percent, but overcharges are 3 percent. In this example higher levels of enforcement action should be taken.
 - If 100 items are verified and 2 overcharges and 3 undercharges are found, the error rate is still 5 percent, but overcharges are only 2 percent of the sample. In this example a lower level enforcement action would be taken.
- (c) **Terms of Increased Inspection Frequency.** -- When a store is on increased inspection frequency, it shall remain at that frequency until two consecutive inspections reveal an accuracy of 98 percent or higher.
- (d) **Higher Levels of Enforcement Action.** -- Overcharges and undercharges are used to determine lower levels of enforcement actions, but higher levels of enforcement action (e.g., fines or penalties) are taken only on overcharges (e.g., when the overcharges exceed 2% on the sample). A store's history of error rates, the time it takes a store to correct errors, the difference in inaccuracy rates found between "regular" and "sale" priced items, the ratio of overcharges to undercharges, a record of valid consumer complaints, and the magnitude of the error(s) may be used to support enforcement action.

Section 12. Post-Inspection Tasks

- (a) You should meet with the store representative to review your findings. Have the inspection report completed prior to the meeting and be prepared to briefly summarize your findings and recommended actions; provide a copy to the store representative.
- (b) Return borrowed safety, sanitation, and/or test equipment.
- (c) If you removed items from display, ensure that the items are returned to their proper location on the store shelves unless the representative requests to have the items returned by a store employee, which is permitted.
- (d) Advise the representative of your findings. Explain any violations and errors. Explain any orders issued and be sure the individual acknowledges understanding what corrective action is expected, if any.
- (e) If necessary, describe the implications of the inspection results and advise the firm of the action that you intend to take. If an increased inspection frequency is called for due to the accuracy level found during the inspection, advise the firm that reinspections will be made, but do not indicate when they may occur.

Section 13. Supervisory Activities

13.1. Baseline Surveys. -- Price verification programs require management support so that the program's objectives and desired benefits can be incorporated into the enforcement agency's work plans and budget. Surveys to measure pre- and post- implementation accuracy should be used to establish a base from which to measure whether a cost/benefit has been obtained.

13.2. Follow-up Inspections. -- Inspections that reveal errors that do not meet the accuracy requirements recommended above must include follow-up action to

ensure that the store fulfills its obligations to ensure accurate prices.

13.3. Management Information System Support. -- To ensure adequate control and follow-up, a database should be established in each jurisdiction that provides information on every store including:

- (a) Date of inspections.
- (b) Type of store
- (c) Accuracy and sample size used in the inspection.
- (d) Ratio of overcharges to undercharges.
- (e) Average money value of overcharges and undercharges.

Section 14. Appendices

Appendix A - Model Forms

These models can be used to develop formal report forms, or they can be copied and used as worksheets for your use in conducting inspections:

- (a) Sample Tally Sheets: these are worksheets that can be used to help you keep track of the number of items verified. They include spaces to record the item's display location (e.g., aisle or department), a description of the item, and the shelf or advertised price. The worksheets are set up for use with the stratified sample collection described above to help you identify the types of products to select.
- (b) Model Inspection Form I: this form can be used to document violations and record findings. A completed sample is provided.
- (c) Model Inspection Form II: this form can be used in stores where a hand-held scanning device is not available, or when it is inconvenient to take the item (e.g., a large item such as a ladder in a hardware store) to a checkout register to verify the price. You can record an identity, the U.P.C. or PLU code, and advertised price so that you can manually enter the codes to verify the price. The form can also be used to record findings. A completed sample is provided.

Appendix A. Model Forms - Price Verification Tally Sheet - Food Store

"End of Aisle" or "Tie In Display"	Location	U.P.C./Identity	Shelf Price
2. _____	2. _____	2. _____	2. _____
3. _____	3. _____	3. _____	3. _____
4. _____	4. _____	4. _____	4. _____
5. _____	5. _____	5. _____	5. _____
"PLU or Coded" Items	6. _____	6. _____	6. _____
"Advertised Sale" Items	7. _____	7. _____	7. _____
10. _____	8. _____	8. _____	8. _____
11. _____	9. _____	9. _____	9. _____
12. _____	10. _____	10. _____	10. _____
13. _____	11. _____	11. _____	11. _____
14. _____	12. _____	12. _____	12. _____
15. _____	13. _____	13. _____	13. _____
16. _____	14. _____	14. _____	14. _____
17. _____	15. _____	15. _____	15. _____
18. _____	16. _____	16. _____	16. _____
19. _____	17. _____	17. _____	17. _____
20. _____	18. _____	18. _____	18. _____
Items on "Special"	19. _____	19. _____	19. _____
"Direct Store Delivery" Items	20. _____	20. _____	20. _____
21. _____	21. _____	21. _____	21. _____
22. _____	22. _____	22. _____	22. _____
23. _____	23. _____	23. _____	23. _____
24. _____	24. _____	24. _____	24. _____
25. _____	25. _____	25. _____	25. _____
26. _____	26. _____	26. _____	26. _____
27. _____	27. _____	27. _____	27. _____
28. _____	28. _____	28. _____	28. _____
29. _____	29. _____	29. _____	29. _____
30. _____	30. _____	30. _____	30. _____
31. _____	31. _____	31. _____	31. _____
32. _____	32. _____	32. _____	32. _____
33. _____	33. _____	33. _____	33. _____
34. _____	34. _____	34. _____	34. _____
35. _____	35. _____	35. _____	35. _____
36. _____	36. _____	36. _____	36. _____
37. _____	37. _____	37. _____	37. _____
38. _____	38. _____	38. _____	38. _____
39. _____	39. _____	39. _____	39. _____
40. _____	40. _____	40. _____	40. _____
41. _____	41. _____	41. _____	41. _____
42. _____	42. _____	42. _____	42. _____
43. _____	43. _____	43. _____	43. _____
44. _____	44. _____	44. _____	44. _____
45. _____	45. _____	45. _____	45. _____
46. _____	46. _____	46. _____	46. _____
47. _____	47. _____	47. _____	47. _____
48. _____	48. _____	48. _____	48. _____
49. _____	49. _____	49. _____	49. _____
50. _____	50. _____	50. _____	50. _____

Price Verification Tally Sheet -Department Stores

	Identity	Location	Advertised Price
"End of Aisle" or "Tie In Display"	1. _____	1. _____	1. _____
	2. _____	2. _____	2. _____
	3. _____	3. _____	3. _____
	4. _____	4. _____	4. _____
	5. _____	5. _____	5. _____
"Advertised Sale" Items	6. _____	6. _____	6. _____
	7. _____	7. _____	7. _____
	8. _____	8. _____	8. _____
	9. _____	9. _____	9. _____
	10. _____	10. _____	10. _____
	11. _____	11. _____	11. _____
	12. _____	12. _____	12. _____
	13. _____	13. _____	13. _____
	14. _____	14. _____	14. _____
	15. _____	15. _____	15. _____
	16. _____	16. _____	16. _____
	17. _____	17. _____	17. _____
	18. _____	18. _____	18. _____
	19. _____	19. _____	19. _____
	20. _____	20. _____	20. _____
21. _____	21. _____	21. _____	
22. _____	22. _____	22. _____	
23. _____	23. _____	23. _____	
24. _____	24. _____	24. _____	
25. _____	25. _____	25. _____	
26. _____	26. _____	26. _____	
27. _____	27. _____	27. _____	
28. _____	28. _____	28. _____	
29. _____	29. _____	29. _____	
30. _____	30. _____	30. _____	
31. _____	31. _____	31. _____	
32. _____	32. _____	32. _____	
33. _____	33. _____	33. _____	
34. _____	34. _____	34. _____	
35. _____	35. _____	35. _____	
36. _____	36. _____	36. _____	
37. _____	37. _____	37. _____	
38. _____	38. _____	38. _____	
39. _____	39. _____	39. _____	
40. _____	40. _____	40. _____	
41. _____	41. _____	41. _____	
42. _____	42. _____	42. _____	
43. _____	43. _____	43. _____	
44. _____	44. _____	44. _____	
45. _____	45. _____	45. _____	
46. _____	46. _____	46. _____	
47. _____	47. _____	47. _____	
48. _____	48. _____	48. _____	
49. _____	49. _____	49. _____	
50. _____	50. _____	50. _____	
"Randomly Selected" Items			

Appendix A Model Form - Price Verification Report I

Page ___ of ___

Inspection: 1st 2nd 3rd **Complaint:** Frequency: Normal Increased **Type:** Stratified Automated Randomized

Location of Test (Store Name, Address, County, Zip Code)	Date:	Telephone:
	Manager:	Type of Store:

Identity, Brand Name, Item or Style Number	Number of Items, Size, Location in Store, or U.P.C.Code	Offered Price	Price Charged	Price Error in Cents ±
1.				
<input type="checkbox"/> Stop Sale Issued <input type="checkbox"/> Corrected	Comments:			
2.				
<input type="checkbox"/> Stop Sale Issued <input type="checkbox"/> Corrected	Comments:			
3.				
<input type="checkbox"/> Stop Sale Issued <input type="checkbox"/> Corrected	Comments:			
4.				
<input type="checkbox"/> Stop Sale Issued <input type="checkbox"/> Corrected	Comments:			
5.				
<input type="checkbox"/> Stop Sale Issued <input type="checkbox"/> Corrected	Comments:			
6.				
<input type="checkbox"/> Stop Sale Issued <input type="checkbox"/> Corrected	Comments:			
7.				
<input type="checkbox"/> Stop Sale Issued <input type="checkbox"/> Corrected	Comments:			
8.				
<input type="checkbox"/> Stop Sale Issued <input type="checkbox"/> Corrected	Comments:			

Comments/Remarks:

Evaluation of Results:

____ Sample - ____ Not on File = ____ Adjusted Sample

Report Acknowledgement

____ Errors + ____ Adjusted Sample = ____ Error In %

Name/Title _____

Accuracy ____ % Ratio: ____ Overcharges ____ Undercharges

Inspector _____

Time In: _____ Time Out: _____

Appendix A Model Form - Price Verification Report I

Page 1 of 1Inspection: 1st 2nd 3rd Complaint: Frequency: Normal Increased Type: Stratified Automated Randomized

Location of Test (Store Name, Address, County, Zip Code) Barkers Food Store 1361 Macon Street Belle, New Jersey 31756		Date: 3/10/95	Telephone: (301) 975-4868		
		Manager: C. Barker	Type of Store: Food Store		
Identity, Brand Name, Item or Style Number	Number of Items, Size, Location in Store, or U.P.C.Code	Offered Price	Price Charged	Price Error in Cents ±	
1. Smith Cake Mix	32oz. 313461346177	3.19	4.19	+1.00	
<input type="checkbox"/> Stop Sale Issued <input checked="" type="checkbox"/> Corrected	Comments: Sale sign not removed				
2. Natural Fruit Juice	1 Liter 617369345619	2.25	2.75	+.50	
<input type="checkbox"/> Stop Sale Issued <input checked="" type="checkbox"/> Corrected	Comments:				
3. Clocks Soap	8oz. 936125376558	1.19	1.00	-.19	
<input type="checkbox"/> Stop Sale Issued <input type="checkbox"/> Corrected	Comments:				
4.					
<input type="checkbox"/> Stop Sale Issued <input type="checkbox"/> Corrected	Comments:				
5.					
<input type="checkbox"/> Stop Sale Issued <input type="checkbox"/> Corrected	Comments:				
6.					
<input type="checkbox"/> Stop Sale Issued <input type="checkbox"/> Corrected	Comments:				
7.					
<input type="checkbox"/> Stop Sale Issued <input type="checkbox"/> Corrected	Comments:				
8.					
<input type="checkbox"/> Stop Sale Issued <input type="checkbox"/> Corrected	Comments:				

Comments/Remarks:

Evaluation of Results:

100 Sample - 0 Not on File = 100 Adjusted Sample3 Errors + 100 Adjusted Sample = 3 Error in %

Report Acknowledgement

Accuracy 97 % Ratio: 2 Overcharges 1 UnderchargesName/Title Chris BarkerInspector T. Price Time In: 8:15 Time Out: 9:30

Appendix A Model Form - Price Verification Report II

Page ___ of ___

Inspection: 1st 2nd 3rd Complaint: Frequency: Normal Increased

Location of Test (Name, Address, County, Zip Code)	Date:	Telephone:
	Manager: _____	

Item/Size or Style Number	Offered Price	Price Charged	Price Error in Cents ±	Item/brand/description/code/size	Offered Price	Price Charged	Price Error in Cents ±
1. Identity: U.P.C/PLU: Comments:				11. Identity: U.P.C/PLU: Comments:			
2. Identity: U.P.C/PLU: Comments:				12. Identity: U.P.C/PLU: Comments:			
3. Identity U.P.C/PLU: Comments:				13. Identity: U.P.C/PLU: Comments:			
4. Identity: U.P.C/PLU: Comments:				14. Identity: U.P.C/PLU: Comments:			
5. Identity: U.P.C/PLU: Comments:				15. Identity: U.P.C/PLU: Comments:			
6. Identity: U.P.C/PLU: Comments:				16. Identity: U.P.C/PLU: Comments:			
7. Identity: U.P.C/PLU: Comments:				17. Identity: U.P.C/PLU: Comments:			
8. Identity: U.P.C/PLU: Comments:				18. Identity: U.P.C/PLU: Comments:			
9. Identity: U.P.C/PLU: Comments:				19. Identity: U.P.C/PLU: Comments:			
10. Identity: U.P.C/PLU: Comments:				20. Identity: U.P.C/PLU: Comments:			

Comments/Remarks:

Evaluation of Results:

____ Sample - ____ Not on File = ____ Adjusted Sample

Report Acknowledgement ____ Errors + ____ Adjusted Sample = ____ Error in %

Accuracy in Percent ____ %

Name/Title

Ratio: ____ Overcharges ____ Undercharges

Stop-Sale Order Issued

Inspector

Appendix A Model Form - Price Verification Report - II

Page 1 of 1

Inspection: 1st 2nd 3rd Complaint: Frequency: Normal Increased

Location of Test (Name, Address, County, Zip Code) Mark Downtown Department Store 11650 Main St. Alice, MN 61619	Date: 3/16/95	Telephone: (614) 916-61460
	Manager: Jim Chester	Type of Store: Department Store

Item/size	Offered Price	Price Charged	Price Error in Cents ±
1. Identity: Sony Color T.V. U.P.C./PLU: 38569 Comments: Model: 6136X	\$189.00	\$199.00	\$+10
2. Identity: Moore Lawn Mower U.P.C./PLU: 31619 Comments: Shp. Wth bagger	\$96.00	\$91.00	\$-5.00
3. Identity: Taft Rake U.P.C./PLU: 39916 Comments: not on file	\$8.99		
4. Identity: Calender U.P.C./PLU: 615191 Comments:	\$5.50	\$7.10	\$+1.60
5. Identity: U.P.C./PLU: Comments:			
6. Identity: U.P.C./PLU: Comments:			
7. Identity: U.P.C./PLU: Comments:			
8. Identity: U.P.C./PLU: Comments:			
9. Identity: U.P.C./PLU: Comments:			
10. Identity: U.P.C./PLU: Comments:			

Item/brand/description/code/size	Offered Price	Price Charged	Price Error in Cents ±
11. Identity: U.P.C./PLU: Comments:			
12. Identity: U.P.C./PLU: Comments:			
13. Identity: U.P.C./PLU: Comments:			
14. Identity: U.P.C./PLU: Comments:			
15. Identity: U.P.C./PLU: Comments:			
16. Identity: U.P.C./PLU: Comments:			
17. Identity: U.P.C./PLU: Comments:			
18. Identity: U.P.C./PLU: Comments:			
19. Identity: U.P.C./PLU: Comments:			
20. Identity: U.P.C./PLU: Comments:			

Comments/Remarks:

Evaluation of Results:

50 Sample - 1 Not on File = 49 Adjusted Sample

3 Errors + 49 Adjusted Sample = 6 Error in %

Accuracy in Percent 94 %

Ratio: 2 Overcharges 1 Undercharges

Stop-Sale Order Issued

Report Acknowledgement

Jim Chester

Name/Title

T. Marlowe

Inspector

Appendix F
USDA Food Safety and Inspection Service Policy Memo

To: Branch Chiefs

Policy Memo 124

From: Cheryl Wade, Director
Food Labeling Division
Regulatory Programs

Subject: Declaration of Net Quantity of Contents on Combination Packages Containing Liquid and Solid Products

Issue: What are the Net Contents Labeling Requirements for Combination Packages which Contain Both Liquid and Solid Products?

Definition: Combination Package - A combination package is a package intended for retail sale, containing two or more individual packages or units of dissimilar commodities (for example, a lunch pack that contains a fruit drink, meat, cheese, crackers, and cookies).

Policy: The guidelines for stating the net quantity of contents on combination packages containing both liquid and solid products are as follows:

1. The declaration of net quantity of contents for a combination package shall be expressed in terms of fluid measure for individual products that are liquid and in terms of avoirdupois weight for individual products that are solid, semisolid, or viscous, provided the quantity statements for identical packages or units are combined. For example, the fruit drink would be expressed in fluid measure and the meat, cheese, crackers, and cookies would be expressed in the combined avoirdupois weight.
2. The declaration of quantity shall be preceded by one of the following terms, as appropriate: "Net Weight," "Net Wt.," or "Net Contents."
 - The net quantity of contents declaration may appear in more than one line. Therefore, both stacked and side-by-side declarations would be considered appropriate.
 - Descriptive terms may be used to identify the liquid and solid components of the package, e.g., entree, meal, or drink; however, such terms shall not include brand names.
 - Connecting words such as "and" or "plus" are permitted to be used as part of the declaration of contents.

Examples of acceptable net content declarations are as follows:

- (1) Entree Net Wt. 8 oz, Drink 4 fl oz (120 ml)
- (2) Net Contents: lunch 8 oz plus fruit drink 4 fl oz
- (3) Net Wt. 8 oz, Drink 4 fl oz (120 ml)
- (4) Net Weight 8 oz. and 4 fl oz.

Federally inspected meat and poultry products are exempt from the requirements of the Fair Packaging and Labeling Act (FPLA), including the mandatory metric labeling provisions that went into effect February 14, 1994. However, if metric labeling is included voluntarily, such labeling should comply with the FPLA.

The guidelines contained in this policy memo will be subject to the provisions prescribed in 9 CFR 317.2(h) and 381.121 of the Federal regulations.

Rationale: As prescribed by the regulations in 9 CFR 317.2(h) and 381.121, the declaration of net quantity of contents shall be expressed in terms of fluid measure for products that are liquid, or in terms of weight for products that are solid, semisolid, viscous, or a mixture of solid and liquid. However, the Federal Meat and Poultry Inspection Regulations do not address the declaration of net quantity of contents for combination products.

Traditionally, FSIS has permitted companies to declare the net quantity of contents for combination packages which contained both liquid and solid products to be expressed only in terms of avoirdupois weight without declaring the fluid measure separately. Recently, the National Institute of Standards and Technology (NIST) informed FSIS that our practices were not consistent with the Uniform Packaging and Labeling Regulation prescribed in the NIST Handbook 130, which requires the declaration of both fluid and weight measures on packages containing liquid and solid products. NIST contended that such requirements are necessary to provide more accurate and adequate labeling information as to the identity and quantity of contents to facilitate price and quantity comparisons by consumers.

Also, it was reported that some federally inspected products were retained by State officials because they believed that the products were mislabeled since the net content declarations did not comply with the provisions stated in the NIST Handbook 130. As a result of these occurrences, industry requested that FSIS provide regulatory guidance for the declaration of net quantity of contents for combination products.

FSIS determined that the petition had merit and should be addressed through rulemaking. The policy described herein is intended to serve as interim policy while regulatory actions are being developed and is consistent with the Uniform Packaging and Labeling Regulation. Consequently, the guidelines described in this issuance may change as a result of the rulemaking process.

Final Report of the Committee on Specifications and Tolerances

Richard C. Suiter, Chairman
Division of Weights and Measures
Nebraska

Introduction

This is the Final Report of the Committee on Specifications and Tolerances for the 80th Annual Meeting of the National Conference on Weights and Measures (NCWM). This report is based on the Interim Report offered in the Conference "Program and Committee Reports" (NCWM Publication 16), the Addendum Sheets issued at the Annual Meeting, and actions taken by the membership at the Voting Session of the Annual Meeting.

Table A identifies the items in the Report by Reference Key Number, Item Title, and Page Number. The item numbers are those assigned in the Interim Meeting Agenda. Voting items are indicated with a "V" after the item number. Consent calendar items are marked with a "VC." Items marked with an "I" after the reference key number are information items. The items marked with a "W" were withdrawn by the Committee. Items marked with a "W" generally will be referred back to the regional weights and measures associations because they either need additional development, analysis, and input, or did not have sufficient support of the Committee to bring them before the NCWM.

The attached Report contains many recommendations to revise or amend National Institute of Standards and Technology (NIST) Handbook 44, 1995 Edition, "Specifications, Tolerances, and other Technical Requirements for Weighing and Measuring Devices." Proposed revisions to the handbook are shown in **bold face print** by ~~crossing out~~ what is to be deleted, and underlining what is to be added. Requirements that are proposed to be nonretroactive are printed in *italics*. Entirely new paragraphs or sections proposed for addition to the handbook are designated as such and shown in **bold face print**.

Note: The policy of the National Institute of Standards and Technology is to use metric units of measurement in all of its publications; however, recommendations received by the NCWM technical committees have been printed in this publication as they were submitted and may therefore contain references to inch-pound units.

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Voting Results

Reference Key No.	House of State Representatives		House of Delegates		Results
	Yes	No	Yes	No	
300 (Consent Calendar)	42	0	49	0	Passed
320-1	34	5	45	3	Passed
320-3	40	0	49	0	Passed
320-7	34	3	39	5	Passed
320-10	41	0	49	0	Passed
330-1	41	0	51	0	Passed
330-2	38	1	47	1	Passed
330-6	38	0	45	1	Passed
330-7	16	17	24	18	Failed
331-2	40	0	41	0	Passed
337-3	37	0	43	0	Passed
356-3	35	0	35	0	Passed
360-4	38	0	41	0	Passed
300 (Report in its Entirety)	38	0	44	0	Passed

Details of All Items

General Code

310-1 VC G-UR.1.3. Selection Requirements; Suitability of Equipment for Liquid-Measuring Devices

(This item was adopted as part of the consent calendar.)

Source: Carryover Item 310-4

Recommendation: Add a new paragraph G-UR.1.3. as follows:

G-UR.1.3. Liquid-Measuring Devices. - To be suitable for its application, the minimum delivery for liquid-measuring devices shall be no less than 100 divisions, except that the minimum delivery for retail analog devices shall be no less than 10 divisions. Maximum division values and tolerances are stated in the specific codes.

Discussion: Devices based on different technologies are used to measure the same products in the same wholesale and retail applications. Consequently, weights and measures officials must examine the suitability of equipment based on the limits of inaccuracy (tolerances) that should be permitted for any given application. The specific codes define the performance accuracy required for a specific *device technology* or measurement application (for example, specific tolerances are stated for mass flow meters, retail motor-fuel dispensers, etc.); however, without further guidance, different tolerances are permitted for the same application. Weights and measures officials have asked for guidelines to use in determining when a device is suitable for a given installation; however, they have indicated that suitability of equipment guidelines are difficult to enforce unless specific criteria are included in Handbook 44. (Item 330-8 in the 1993 S&T Committee report and Item 310-4 in the 1994 S&T Committee report should be referenced for background information.)

The Committee reviewed a proposal from California Division of Measurement Standards to modify the proposed G-UR.1.3. to specify minimum delivery amounts; maximum division values are specified in the individual specific codes. The Committee found this proposal to be straightforward and easily understood and felt that it summarized the issue of minimum delivery amount for liquid-measuring devices. Because suitability requirements must be established for other measuring devices than those found in the Liquid-Measuring Devices Code (e.g., LPG & anhydrous ammonia meters, vehicle-tank meters, etc.), the criteria are being proposed for inclusion in the General Code.

In its 1994 final report, the S&T Committee recommended a new paragraph G-UR.1.3. and an accompanying table (see 1994 Final Report). Comments received at the Interim Meeting indicated that there were still many questions concerning interpretation and application of the table. In general, the table is believed to be too complex to be readily understood and applied. Consequently, the Committee is no longer considering the original table.

An alternative table (see next page) was proposed by the National Type Evaluation Technical Committee (NTETC) Measuring Sector and submitted by the Northeastern Weights and Measures Association (Northeastern) and Southern Weights and Measures Association (Southern) for consideration at the 1995 Interim Meeting; these regions viewed the alternative table as more easily understood and user friendly. The Committee noted that the proposed G-UR.1.3. shown in the "Recommendation" section eliminates the need for a separate table; however, the Committee believes that the table proposed by the Measuring Sector has merit and is willing to consider including it in the recommendation along with G-UR.1.3. if there is a perceived need for the additional table. The proposed table is included in this report for review and discussion purposes. The Committee has asked for clarification on how the maximum division value column is to be applied when two separate values are listed. For example, for a digital motor fuel dispenser, the maximum division value can be 0.01 L or 0.1 L; it is unclear how to select the maximum value that is appropriate for a given application.

The Committee also noted that it is studying possible revisions to the tolerance structure of the Liquid-Measuring Devices Code (see Item 330-4) to correspond with the tolerance structure adopted in the Mass Flow Meters Code in July 1994.

Suitability of Equipment Criteria for Liquid-Measuring Devices (Measuring Sector Proposal)				
Application or Commodity		Minimum Delivery	Maximum Division Value	
Motor Fuel	Analog	100d	0.01 L 0.01 gal	
		10d	1.0 L 0.1 gal	
	Digital	100d	0.01 L 0.01 gal	
			0.1 L 0.1 gal	
Motor Fuel	LPG	100d	0.01 L 0.01 gal	
			0.1 L 0.1 gal	
Home Heating Oil		100d	0.1 L 0.1 gal	
NH_3 and LPG Other than Motor Fuel		100d	0.1 L 0.1 gal	
			1.0 L 1.0 gal	
Milk and Other Food Products		100d	0.1 L 0.1 gal	
		100d	1.0 L 1.0 gal	
Cryogenic Liquids		100d	0.1 L 0.1 gal	
			10 L 1 gal	
All Other Metering Applications		100d	1.0 L 1 gal	
			0.1 L 0.1 gal	
			0.01 L 0.01 gal	
			0.001 L 0.001 gal	

Table T.2. of the Mass Flow Meters Code of Handbook 44 establishes accuracy classes for mass flow meters; for each accuracy class, the table specifies an application or commodity to be measured, along with the acceptance and maintenance tolerance value for that class. Inclusion of such a table in the Liquid-Measuring Devices Code might address some of the remaining questions of how accuracy requirements affect the suitability of a device for a given installation.

310-2 I User-Programmable Software; Manufacturer-Modified Software

Source: Carryover Item 310-3

Discussion: The Executive Committee has been questioned regarding the National Type Evaluation Program (NTEP) practice of issuing NTEP Certificates of Conformance for software that runs on PCs. Some software is programmable by the user; other software is not programmable by the user, but is routinely modified by the manufacturer. There are some in industry who are particularly concerned about software developed by "third parties," that is, software houses that develop software to interface directly with weighing/load-receiving elements. However, weights and measures cannot limit technology and how it is used in commercial weights and measures applications (as long as it complies with H44).

A meeting on software was held in conjunction with the December 1994 NTEP Weighing Sector meeting. Members from the NTEP Board of Governors, the Weighing Sector, and the Measuring Sector were present and discussed this item. Due to the complex nature of this issue, it was decided that a request should be made to the Board of Governors to form a working group to study this issue. Representatives of the Weighing and Measuring Sectors voted to continue to the ongoing evaluation of software under NTEP, pending further recommendations by the proposed working group.

At the 1995 Interim Meeting, the Board of Governors recognized the formation of a working group chaired by Michael Adams, Fairbanks Scales, and including representatives from the weighing and measuring industries and at least one representative from a participating NTEP laboratory (See Item 102-9). Issues to be addressed by the group include the evaluation of software by NTEP as well as routine examinations conducted by weights and measures officials. The Board of Governors also agreed that NTEP should continue its evaluation of software.

Canada has established a work group to investigate issues related to the security of software and how to track the changes made to software used in commercial applications; they will collaborate with the NCWM work group on this issue.

In comments forwarded to the Committee on this issue, the Southern indicated its support for the goals for program design and for identifying the metrologically significant portion of the software. The Southern believes that weights and measures officials need more extensive examination procedure outlines and field manuals for the inspector to identify those critical features and device operations that must be checked in the field to ensure compliance with Handbook 44 requirements. Many device parameters and features are selectable at the time of installation, but some are more critical than others. The most critical parameters and features should be checked during routine field inspections. Mixed comments were received from the Central on this issue. Comments indicate a lot of confusion about how software should be addressed by NTEP and in the field.

At the Annual Meeting, the Committee discussed concerns in several areas dealing with software.

The Committee noted confusion on the part of some weights and measures officials and industry as to when an evaluation of software is subject to NTEP evaluation. Minimum standards are needed for the development of the metrological portion of software. NTEP evaluations encourage standardization of metrological information in the software and may provide a forum to communicate Handbook 44 requirements to software programmers who are developing software for weights and measures device applications. The Committee recognizes that additional work may be needed to ensure that all NTEP laboratories are uniformly applying criteria to software and that this information is communicated to device manufacturers and software developers.

The Committee discussed specific applications in which a manufacturer needs maximum flexibility for marketing a product and feels that the manufacturer should not be restricted to specific hardware if weights and measures can verify that the metrological portion of the software meets all applicable requirements of Handbook 44. Regardless of whether or not a decision is made to continue with the NTEP evaluation of software, the Committee recognizes a need to develop guidelines which will assist the field official in verifying that the software package is appropriate for the application, is

set up to enable the weighing or measuring system to comply with Handbook 44, and, if NTEP evaluation of software is required, that the version in the field has not been metrologically modified from the version originally evaluated by NTEP. If NTEP discontinues evaluation of software, the Committee recognizes that a bigger burden may be placed on weights and measures officials to evaluate software and may encourage lack of uniformity in the development of software.

Isolation and physical or electronic sealing of the metrological portion of the software is an option that has been discussed in the past, and the Committee continues to favor such an approach.

310-3 VC G-S.6. Marking Operational Controls, Indications, and Features; Use of Pictograms

(This item was adopted as part of the consent calendar.)

Source: Ohaus Corporation

Recommendation: Modify paragraph G-S.6 as follows:

G-S.6. Marking Operational Controls, Indications, Features. - All operational controls, indications, and features, including switches, lights, displays, push buttons, and other means, shall be clearly and definitely identified. The use of approved pictograms or symbols shall be acceptable. [Nonretroactive as of January 1, 1977.]

(Amended 1978)

Discussion: The Weighing Sector of the National Type Evaluation Technical Committee considers some pictograms or symbols to be acceptable for marking operational controls of scales submitted for type evaluation under the National Type Evaluation Program. The Weighing Sector has established a list of specific symbols considered to be acceptable for use in marking scales to meet paragraph G-S.6. While the present language in G-S.6. does not prohibit the use of pictograms or symbols to mark a device, it has been suggested that a specific statement be added to paragraph G-S.6. to clarify that pictograms or symbols may be used.

The Committee received little opposition to the proposed change to G-S.6., particularly since it would clarify the intended application of the paragraph with respect to symbols and pictograms. Background discussion from the Committee's Interim Agenda is included below for reference.

While the present code does call for clear and definite identification, it does not specify marking in the English language. Although this may be presumed, such a presumption is antiquated by today's global standards. Even in the United States, pictograms are commonly used for road signs, directional signs, rest room signs, etc.

Marking function labels or individual keys on a scale in various languages is an expensive burden to the manufacturer. Manufacturers interested in the export market face a large variety of marking requirements in various countries. This is particularly relevant for those who export to the European Community (EC), where there are over 11 different languages. The use of pictograms reduces cost and increases the feasibility of export to Europe and other countries. It is common practice for the exporter to translate the direction manual for various target markets, and the manual is also suitable for describing the functions covered by the pictograms. The use of standard pictograms will allow rapid identification of common keys. A good analogy is the elongated space bar on a keyboard: this key is not marked, but its function is readily identified by its shape and location by those who have experience using keyboards.

310-4 W Removal of Nonretroactive Date, G-S.1.(c) Identification, Serial Number

(This item was withdrawn.)

Source: S&T Committee

Recommendation: Modify paragraph G-S.1.(c) as follows:

- (c) except for equipment with no moving or electronic component parts, a nonrepetitive serial number; and
[Nonretroactive as of January 1, 1968]

Discussion: During its working sessions at the Interim Meeting, the Committee noted that periodic review of nonretroactive dates in Handbook 44 is undertaken by the S&T Committee to identify nonretroactive requirements which should be eliminated from the Handbook. Such requirements are those which have been in the Handbook for a long period of time (generally 10 years or more) and for which there no longer appears to be a need to maintain the nonretroactive status. The Committee reviewed the Handbook and added this item as a voting item following the Interim Meeting. The nonretroactive date in paragraph G-S.1.(c) is 27 years old, and the Committee believes that the nonretroactive status is no longer needed. Consequently, the Committee recommends that the term "nonretroactive" be deleted. The Committee encourages input on this proposal to ensure that the recommended change would not adversely affect devices presently in commercial use.

The Committee recognized that there is concern over the number of devices that this change would negatively impact and believes that the nonretroactive date should not be deleted. Consequently, the Committee is withdrawing this item.

Scales Code

320-1 V Minimum Load on a Vehicle Scale

(This item was adopted.)

Source: Western Weights and Measures Association (Western);
 Northeastern Weights and Measures Association (Northeastern)

Recommendation: Retain the current wording of UR.3.7.

Discussion: In 1994, the Committee was asked to consider adding an exemption to UR.3.7. to recognize different minimum load criteria for household solid waste. The Committee considered several proposals to modify paragraph UR.3.7. by lowering the minimum load requirements or by adding an exemption for weighing household solid waste for disposal. However, the Committee did not receive adequate justification for making changes to the current requirement. The Committee is hesitant to add further exemptions; it can be self-defeating to adopt a requirement and then attach a laundry list of exemptions to it. The Committee also noted that technology exists to permit a scale to be set up to weigh in multiple weight ranges, each with a different division size; such technology facilitates the use of a single scale for different minimum load applications.

The Committee recommends keeping UR.3.7 as it is. The Committee is presenting the recommendation for a vote rather than withdrawing the item since many comments have been received. However, if the item should fail, the Committee is willing to review the item again for inclusion of possible exemptions. Any proposed exemption must be justified by conclusive evidence of need. The history of the minimum load requirement for vehicle scales is repeated below for reference.

History: The 1000-lb minimum load for vehicle scales was adopted in 1937. The requirement applied specifically to gross loads, although consideration was also given to minimum net loads. The main motivation for the 1937 discussion was the relationship of the minimum tolerance to the gross load, primarily as it related to weighing bags of coal on a vehicle scale. The errors due to rounding to the nearest division were not considered.

In the early 1980s, the scale industry considered adoption of OIML criteria for scales. These criteria included recommended minimum loads for scales of different accuracy classes. The minimum load requirements were based upon both the tolerance applicable to the scale and the error associated with rounding weight values to the nearest scale division. The maximum effect of the round-off error can be computed by dividing $\pm 0.5d$ by the gross load in divisions, then converting to a percentage of the gross load. For example, an error of $\pm 0.5d$ at 20d represents 2.5 percent of the load being weighed; for a load of 10d, the round-off error can be as large as 5 percent of the load. The recommended minimum load on a class III scale is 20d, which can have a potential round-off error of $\pm 0.5d$ or 2.5 percent. In 1984

the Conference adopted recommended minimum load criteria for scales marked with an accuracy class. The requirements were part of the revision to the Scales Code tolerances which took effect in 1986.

The issue of a minimum net load on vehicle scales was first addressed by the NCWM in the 1987 S&T Report (Item 320-24). Because the net weight on a vehicle scale is determined by performing two weighing operations, both of which are rounded to the nearest division, the maximum potential round-off error is $\pm 1d$. Consequently, a minimum net load greater than 20d can be justified. For example, a minimum net load of 40d would give the same 2.5 percent potential error on a net load for a vehicle scale as for a single weighing operation on a class III scale at 20d. (Note that if tare is taken to the internal resolution of the scale, rather than to the displayed resolution of the scale [as on a computing scale] then the potential round-off error relative to the net load remains at $\pm 0.5d$. Because vehicle scales must have mathematical agreement of gross, tare, and net weights, the gross and tare weights must be rounded to the displayed division.) The minimum net load requirement was adopted in 1988 (Item 320-17) and was expressed as 50d.

The exemption for scrap material for recycling was adopted in 1992. The justification was based upon the cost of handling the material compared to the value of the scrap and the desire to facilitate recycling to reduce waste and pollution.

320-2 VC S.1.7. Capacity Indication

(This item was adopted as part of the consent calendar.)

Source: NIST Office of Weights and Measures/NTEP

Recommendation: Modify paragraph S.1.7. Capacity Indication, Weight Ranges, and Unit Weights, as follows:

- S.1.7. Capacity Indication, Weight Ranges, and Unit Weights. - ~~An indicating or recording element shall neither display nor record any values when the gross platform load (not counting initial dead load that has been canceled by an initial zero setting device) is in excess of:~~
- (a) ~~scale capacity plus 9 scale divisions for electronic computing scales (excluding postal scales and weight classifiers); or*~~
- (b) ~~105 percent of the capacity of the system for all other scales.~~
- (a) Gross Capacity. An indicating or recording element shall not display nor record any values when the total platform load (not counting the initial dead load that has been canceled by an initial zero-setting mechanism) is in excess of 105 percent of scale capacity.
- (b) Capacity Indication. Electronic computing scales (excluding postal scales and weight classifiers) shall neither display nor record a gross or net weight in excess of scale capacity plus 9d.

The total value of weight ranges and of unit weights in effect or in place at any time shall automatically be accounted for on the reading face and on any recorded representation.

This requirement does not apply to: (1) single-revolution dial scales, (2) multi-revolution dial scales not equipped with unit weights, (3) scales equipped with two or more weighbeams, nor (4) devices that indicate mathematically derived totalized values.

[Nonretroactive as of January 1, 1993.]

Discussion: The present subparagraph (a) was added in 1992 to limit the overcapacity indication for computing scales to 9 divisions; it was not intended to affect the 105 percent range over which the scale could continue to operate. If industry had understood that the change for computing scales would limit the zero range of the scale to only 9 divisions while reducing the scale capacity, scale manufacturers would probably have opposed this change.

The literal interpretation of the present language in S.1.7. implies that if a computing scale sets more than 9 scale divisions to zero, then the weighing range must be reduced to prevent any scale indication if the gross platform load

exceeds scale capacity plus 9 scale divisions. It is believed that the Conference intended to allow computing scales to continue to zero loads so that they could continue to have a weighing range up to 105 percent of the rated capacity.

For example: Prior to the changes made to S.1.7. in 1992, a 30 x 0.01 lb scale could have had a total gross load of 31.5 lb (105% of capacity) before blanking the display. With the literal interpretation of the present language, the same scale would be restricted to a total gross load of 30.09 lb (9d). The change made in 1992 was intended to still permit a total gross load of 105 percent of capacity, but to limit the *indication* to no more than 9d. If the criteria were applied as originally intended, this 30 x 0.01 lb scale would be permitted to have a tare of as much as 1.41 lb deducted and still indicate up to 30.09 lb; the total gross load would be 1.5 lb (which does not exceed the 105% limit for total gross load) and the indication of 30.09 would not exceed 9d. If a tare of 1 lb were deducted, this 30 x 0.01 lb scale still could not indicate more than 30.09 lb.

320-3 V Tolerances for On-Board Weighing Systems; UR.1.1. Selection Requirements - General, Table 7a

(This item was adopted.)

Source: NIST Office of Weights and Measures

Recommendation: Add "vehicle on-board weighing systems" to the Class III and III L categories in Table 7a.

- III** All commercial weighing not otherwise specified, grain test scales, retail precious metals and semi-precious gem weighing, animal scales, postal scales, and scales used to determine laundry charges, and vehicle on-board weighing systems
- III L** Vehicle, axle-load, livestock, railway track scales, crane, and hopper (other than grain hopper) scales, and vehicle on-board weighing systems

Discussion: Over the past several years, the NCWM has discussed the issue of on-board weighing systems and has adopted specific paragraphs in Handbook 44 to address special considerations involved in on-board weighing. These discussions have primarily focused on the use of on-board weighing systems for curbside refuse removal which typically involves weighing of refuse in relatively small garbage containers. These systems are usually equipped with lifting arms to pick up the container, weigh and empty it, and determine the net quantity dumped.

More recently, NTEP has been approached by companies which have developed systems designed to weigh the entire back of the vehicle bed rather than individual containers. The quantities involved are typically much larger than those used in the homeowner curbside pickup.

A vehicle on-board weighing system that weighs the same commodities and net quantities commonly weighed on a vehicle scale may be considered as class III L provided that it meets the parameters of Table 3 (i.e., division value of 5 lb or more and having 2000 to 10 000 divisions) and the minimum load requirement of 50d is satisfied for the application. It is recommended that Table 7a be amended to indicate that vehicle on-board weighing systems may be either class III or III L, depending upon the application.

The Committee recognizes the need to ensure that test procedures developed for on-board weighing systems adequately cover these larger capacity systems. (See also related Item 320-5.)

320-4 W In-Motion Tolerances for On-Board Weighing Systems

(This item was withdrawn.)

Source: Weigh-Tronix, Inc.

Discussion: At the Interim Meeting, the Committee reviewed the proposal submitted by Weigh-Tronix, Inc. to specify a special tolerance for in-motion on-board weighing systems. The Committee concluded that it is not necessary to modify

the tolerances since there appear to be devices that are capable of meeting the current class III tolerances. Comments received also suggest that the sample size specified in the proposal may not be adequate compared to sample sizes presently specified for other in-motion tolerances in the Scales Code. The Committee requests that additional information be provided to justify a larger tolerance; the item will be withdrawn if no additional information is received by the July 1995 Annual Meeting. The original proposal and discussion are repeated for reference.

Weigh-Tronix Proposal and Discussion:

The proposal submitted by Weigh-Tronix is similar to paragraph TN.3.8. for in-motion monorail scales, except for the total load tolerance. The rationale presented for this approach is to allow for the dynamic effects of an occasional shift of load in the refuse container while it is being lifted, especially in an initial installation acceptance test. Weigh-Tronix also notes that systems such as this allow refuse disposal rate equity to the consumer through weight-based billing. Municipalities then have an equitable means of assessing individual disposal fees. Also, weight-based billing has been identified as the most effective incentive for encouraging recycling and waste reduction.

In-Motion Weighing, On-Board Refuse Lifter Scales. - On an in-motion test of 20 or more individual test loads, 10 percent of the individual test loads may be in error, each not to exceed two times the applicable tolerance. The error on the total of the individual test loads shall not exceed the applicable tolerances.

Based upon input received on this Item at the Interim Meetings and a letter from the original submitter requesting that this item be withdrawn, the Committee is withdrawing this item from its agenda.

320-5 I Test Procedures for On-Board Weighing Systems

Source: NIST Office of Weights and Measures/NTEP

Recommendation/Discussion: Several years ago, the Scales Code of Handbook 44 was revised to include specific criteria for on-board weighing systems. In the process of performing a type evaluation on an on-board weighing system, type evaluation test procedures for these devices were developed by the Ohio participating NTEP laboratory; the laboratory also developed proposed criteria for routine field testing of these devices. The test procedures are included in Appendix A for review and comment. The procedures must be reviewed to ensure that they are adequate for testing larger capacity systems.

The Committee has reviewed a test procedure prepared by Jim Truex, Ohio Weights and Measures, for use in routing field testing of these items. The Committee endorses the procedures and believes that they should be used as a basis for an examination procedure outline to be included in NCWM Publication 12. The Committee plans to bring this item before the NCWM next year for voting, and the Committee encourages NCWM members to study the procedures included below for reference:

Performance Tests for Electronic Vehicle On-Board Weighing Systems

Note: These tests apply to systems such as lift truck scales, scales mounted on refuse vehicles, etc. It has generally been agreed that scales with a capacity of 30 000 lb and less will be considered Class III since they would be used in a weighing operation where a Class III scale would normally be used. Likewise, scales with a capacity of more than 30 000 lb will be considered Class III L when they are used in a weighing operation where a Class III L scale would normally be used.

Field Testing

Because of the design of the device and/or abnormal test conditions, it may be necessary for the manufacturer, owner, or user to supply special testing apparatus (mounting frames, test baskets, etc.) for testing purposes. Likewise, a normal size commercial wood skid can be used as the load receiving element for a lift truck scale under evaluation. As much testing as possible may be performed in a stationary condition to save evaluation time and other possible hardships. In most cases, as-used testing will have to be conducted.

XX.1. Initial Field Verification Test

XX.1.1. Test Considerations

As-used testing is very important for vehicle on-board weighing systems to properly simulate actual use conditions. As-used conditions must be considered and tested when evaluating a system. Depending on the type of device, consider the following:

- Performance when the vehicle engine is running.
- Performance when the vehicle is moving.
- Test apparatus performance versus normal load receiver performance (e.g., test pan vs. refuse container). For ease and safety reasons test apparatus may be used, but like performance must be verified.
- Depending on the type of vehicle and mounting of the on-board weighing system, consider performance when the wheels are on unlevel terrain and the frame is under a twisting effect.
- It may not be possible or advisable to use known test weights, so pre-weighed loads of varying weights need to be used (e.g., a dynamic refuse dumping system).
- Load shift on dump systems such as refuse dumpers (pre-weighed sandbags may be used).
- It may not be possible to utilize known test weights to capacity or at all on some larger on-board systems (e.g., a 50 000-lb tank wagon). In these cases a platform scale, vehicle scale, or mass flow meter may need to be used.
- Locate a safe location for out-of-level testing (e.g., a remote ramp or parking lot).

XX.1.2. Determine performance of the width of zero, center of zero, discrimination near zero, center of zero, discrimination near zero, and discrimination near capacity.

XX.1.3. Increasing/Decreasing Load Test

Increasing load tests should be conducted. Use at least five test loads for the decreasing load test. When practical, choose weights close to the upper range of each tolerance level.

Remember that decreasing load tests may be especially important for on-board weighing systems since they may be used to back-weigh.

XX.1.5. Shift (off-center) Tests

XX.1.5.1. Shift tests with one-half capacity test load centered in the center of each quadrant should be conducted.

XX.1.5.2. Shift tests with one-quarter capacity test load placed on the corners should be conducted.

Note: The shift test for a vehicle on-board weighing system shall be conducted in a manner consistent with its normal use (N.1.3.7.). Normal shift tests, as described above, may not be practical for some on-board weighing systems (e.g., when the load-receiving element is a home refuse container). These systems may be susceptible to off-center loading or to load shifting, but it may be more practical to test for these circumstances during the as-used part of the evaluation.

XX.1.6. Out-of-Level Tests

A vehicle on-board weighing system shall operate within tolerance when the weighing system is out of level up to 3 degrees (or 5%) (S.2.4.1.). The system is not prohibited from operating when out of level beyond 3 degrees (or 5%). However, beyond the 3 degrees (or 5%), if the accuracy of the system is affected by out-of-level conditions normal to the use of the device, the system shall be equipped with an out-of-level sensor that inhibits the weighing operation when the system is out of level to the extent that the accuracy limits are exceeded.

XX.1.6.1. Place one side of the vehicle 3 degrees (or 5%) out-of-level. Conduct an increasing load test, decreasing load test, and shift test. Additional tests need to be conducted to the extent that the system continues to operate while out-of-level in this direction.

XX.1.6.2. Place the opposite side of the vehicle out-of-level 3 degrees (or 5%) and to the extent that the system continues to operate. Perform tests.

XX.1.6.3. Place the front of the vehicle out-of-level 3 degrees (or 5%) to the extent that the system continues to operate. Perform tests.

XX.1.6.3. Place the back of the vehicle out-of-level 3 degrees (or 5%) and to the extent that the system continues to operate. Perform tests.

320-6 VC S.1.8.3. Customer's Indications and S.1.8.4. Recorded Representations, Point of Sale Systems; Unit Pricing in Whole Units of Weight; Unit Pricing in Metric Units

(This item was adopted as part of the consent calendar.)

Source: NIST Office of Weights and Measures/NTEP

Recommendation: Modify paragraph S.1.8.3. Customer's Indications as follows to recognize pricing per 100 grams:

S.1.8.3. Customer's Indications. - Weight indications shall be shown on the customer's side of computing scales when these are used for direct sales to retail customers. Computing scales shall be equipped on the operator's side with digital indications, such as the net weight, unit price, or total price, shall be similarly equipped on the customer's side. Unit price displays visible to the customer shall be in terms of single whole units of weight and not in common or decimal fractions of the unit. Scales indicating in metric units may indicate price per 100 grams.

Modify the footnote to paragraph S.1.8.4. as follows:

1 Weight values shall be identified by kilogram, kg, grams, g, ounces, oz pound, lb, or the sign "#." For devices interfaced with scales indicating in metric units, the unit price may be expressed in price per 100 grams.

Discussion: This issue was raised by a scale manufacturer wanting to manufacture a scale for the United States and Canada. The NTEP laboratory conducting a type evaluation of the scale questioned the 100 gram pricing feature because S.1.8.3. requires the unit price to be in terms of whole units of weight, not in common or decimal fractions. The Committee considered the facts that (1) Canada and Europe permit pricing by 100 grams; (2) the Technical Advisor from Canada indicated that pricing per 100 grams has been accepted there for a long period of time and has not created any problems; and (3) pricing by kilogram would create the appearance of inflated prices and hinder acceptance of metric in the U.S.

There was much discussion of this issue pro and con at the Interim Meeting. Of great concern to weights and measures officials is that no proposed changes to paragraph S.1.8.3. should allow fractional pricing (e.g., price per 1/4-lb or price per 1/2-lb) to re-enter the market. The Committee shares this concern and, consequently, specifically limited the proposed change to devices indicating in metric units and for price per 100 grams. The Committee also agreed that changes should be made to the footnote of paragraph S.1.8.4. Recorded Representations, Point of Sale Systems to include reference to metric units and to recognize other permissible units of measure which are commonly found in point of sale systems.

The Committee is amenable to permitting pricing per 100 grams to facilitate device export and in anticipation of devices indicating in metric units in the U.S. marketplace. It was also noted that failure to recognize this method of unit pricing might create trade barriers for U.S. manufacturers exporting into other countries. Also significant to the Committee's decision was the use of 100-gram unit pricing in pre-packaged commodities.

Concerns were expressed during the Interim Meeting that the present requirements in the Model Unit Pricing Regulation in Handbook 130 do not recognize pricing per 100 grams. It was suggested that modifications proposed above be delayed until this method of pricing is recognized in Handbook 130. The Committee carefully considered these comments; however, it recognized that action must be taken by one committee or another in order to facilitate the use of metric in

the U.S. marketplace, and the discussion seemed to be a "chicken and egg" dilemma. The Committee noted that the Unit Pricing Regulation would still prohibit a device from being set up for pricing per 100 grams in jurisdictions which have adopted the model regulation. However, the proposed change to Handbook 44 will facilitate export of devices with this feature until the Laws and Regulations Committee can consider changes to the Uniform Unit Pricing Regulation.

The S&T Committee asks that the Laws and Regulations Committee consider making similar changes to the Uniform Unit Pricing Regulation to permit pricing per 100 grams.

The Committee did not intend to require a device indicating in metric units to have to indicate in both whole units of weight and in price per 100 grams. Nor did the Committee intend to preclude a scale from indicating a unit price only in whole units of weight or only in price per 100 grams. For example, if a manufacturer wants to design a scale that indicates in price per 100 grams only (but not price per kilogram), the language should permit this option. Thus, a scale indicating in metric units may indicate in whole units of weight and/or in price per 100 grams.

320-7 V AAR Specifications for Railway Track Scales

(This item was adopted.)

Source: CSX Transportation; Association of American Railroads (AAR)

Recommendation: The Committee recommends adding the following footnote to Scales Code paragraph UR.1. Selection to alert users and purchasers of railway track scales to the existence of other requirements pertaining to the installation and design of such scales.

¹ Purchasers and users of scales such as railway track, hopper, and vehicle scales should be aware of possible additional requirements for the design and installation of such devices.

Discussion: The AAR has more extensive specifications for the design and installation of railway track scales than those contained in Handbook 44. As a result, a railway track scale may meet Handbook 44 requirements and receive an NTEP Certificate of Conformance, but the design may not be acceptable to the railroads. Since weights and measures officials have encountered such situations, this has led to questions concerning the credibility of the NTEP CC for the intended application. There is concern that the purchaser of a such a device may not be aware of additional requirements; therefore, Handbook 44 should alert the purchaser that additional requirements may apply. Additional suggestions include inserting a statement in the NTEP CC that additional requirements may apply in certain installations.

There was opposition to wording of the original proposal that would have specifically referenced AAR specifications in Handbook 44. Concerns were raised over the possibility of encumbering the inspector to apply the additional requirements in the AAR Scale Handbook and citing requirements in another document by reference. The Committee felt that the reasons for removing the reference to the AAR Scale Handbook were valid, and that the footnote without the reference would accomplish the intent of the original proposal.

At the Annual Meeting, the Committee heard comments encouraging removal of the phrase "railway track scales"; however, the Committee felt that removing the term "railway track scales" would diminish the effectiveness of the footnote as would moving it to the General Code. The Committee recognized the concern that listing only railway track scales in the footnote may imply that these devices are the only devices for which additional requirements may exist.

320-8 I Concentrated Load Capacity; Declaration of Other Than Dual-Axle Configurations

Source: NIST Office of Weights and Measures/Carryover S&T Issue

Discussion: The Committee considered two proposals for establishing the ratings of vehicle configurations other than dual axle load ratings: (1) The use of the FHA Bridge Gross Weight Formula B and an "r" factor as a means for establishing these ratings, as discussed in the Committee's 1994 Final Report; and (2) Permitting other axle configurations as a percentage of the declared CLC, as proposed by Thurman Scale in the Committee's 1995 Interim Agenda. The

Committee heard a presentation from Bruce Reirson, Mettler-Toledo supporting the use of the FHA Bridge Gross Weight Formula and the "r" factor.

Comments during the open session indicated concern over the exaggeration of CLC ratings and ratings for other axle configurations in advertisements. Vehicle scale users indicated that they would like to have a meaningful way to equitably compare vehicle scales and determine whether or not the scale is suitable for the intended application. Some comments supported the use of the bridge formula and the "r" factor as a reasonable way for uniformly rating scales; other comments indicated that the bridge formula is not appropriately applied to the design of scales. The Committee believes that defining a method for other axle configurations is a marketing issue and not within the bounds of weights and measures to resolve. If manufacturers elect to mark other configurations, the Committee feels it is not weights and measures responsibility to verify the accuracy of the information. The Committee noted that the Conference took a clear position in 1994 on the definition of CLC, and that scales should be tested and marked with CLCs which are equal to the dual axle rating.

The Committee has maintained this item with an informational status to allow for additional comments to be made. However, unless additional justification is provided by July 1995 to indicate why the NCWM should specify guidelines for the declaration and marking for ratings of other axle configurations, the item will be withdrawn from the Committee's agenda. The following excerpts from the Committee's 1994 Final Report and its 1995 Interim Agenda are included for reference as background material to this issue.

Group of Two Axles Provides Basis for Comparisons

At the 1994 Interim Meeting, the Committee discussed a proposal to relate axle loads and the different vehicle axle configurations through the Federal Highway Administration Bridge Gross Weight Formula B and an "r factor." The Committee received a second proposal suggesting that a separate definition for a dual axle rating be added to Handbook 44 and that the definition of CLC be modified so that it applied only to the test of a scale. The Committee opposed a separate definition for a dual axle rating because it had always intended for the CLC and axle-load ratings to be the same. However, since the definition of CLC did not address the various axle configurations, the Committee decided to specify in the definition that the CLC is to be established based upon a group of two axles with a specific spacing. This is an effort to provide a consistent basis for manufacturers to rate their scales. The axle spacing is for rating the scale with its CLC; it does not restrict the types of vehicles that may be weighed on the scale, provided that the loading does not exceed the corresponding axle load weights computed from the Federal Highway Administration Bridge Gross Weight Formula B (see below).

Other Axle Configurations

The Committee concluded that the r factor has merit, but decided not to include it in Handbook 44 since it may be too complex for field enforcement and the ratings would be difficult to assess. However, the r factor may be a basis for scale purchasers to compare CLC ratings for vehicle scales and to relate the CLC to the types of vehicles and axle configurations that will be weighed by the scale owner. Since the r factor and the Federal Highway Administration Bridge Gross Weight Formula B establish a way to convert axle ratings for groups of more than two axles to an equivalent rating for a group of two axles, the Committee decided to specify that the CLC be based upon a group of two axles with the specified spacing. Consequently, scale companies may use the r factor to relate the CLC rating to vehicles with other axle configurations to aid the scale purchaser to select the appropriate scale for the application.

Proposal 1: To make the relationship of the r factor available for comparison purposes, the relationship of the r factor and the Federal Highway Administration Bridge Gross Weight Formula B is stated below.

Scale Load Limits. - The manufacturer shall specify the scale load limits for consecutive vehicle axles according to the Federal Highway Administration Bridge Gross Weight Formula B, as modified by the "r" factor":

$$W = r \times 500 \left[\left(\frac{LN}{N - 1} \right) + 12N + 36 \right]$$

where W is the maximum load in pounds carried on any group of two or more consecutive axles; r is the factor assigned by the manufacturer that specifies the maximum load; L is the distance in feet between the first and last axle of that group; and N is the number of axles of that group, where N ≥ 2.

For a single axle, the weight limit is W = r x 20,000.

Proposal 2: The following proposal was submitted by Thurman Scale as an alternative to the use of the "r" factor:

- the *dual-axle rating* is specified by CLC,
- the *single-axle rating* shall be 85 percent of the CLC or less, and
- the *tri-axle rating* shall be up to 115 percent of the CLC.

This proposal establishes limits for single- and tri-axle configurations. No specific criteria have been suggested for other axle configurations at the present time.

Thurman Scale also suggests that the single- and tri-axle ratings be marked on the scale along with the CLC rating to provide information to the customer on the proper use of the scale for single-, dual-, and tri-axle configuration vehicles.

At the Annual Meeting, the Committee decided to keep this item informational to allow industry additional time to study the issue and provide input.

320-9 VC S.2.5.1. Electronic Elements; Motion Detection for Large Capacity Hopper Scales

(This item was adopted as part of the consent calendar.)

Source: Kanawha Scale and Systems, Inc.

Recommendation: Modify paragraph S.2.5.1. (a) as follows:

S.2.5.1. Digital Indicating Elements. - Digital indicating elements equipped with recording elements shall be equipped with effective means to permit the recording of weight values only when the indication is stable within:

- (a) plus or minus 3 scale divisions for scales of more than 2000 kg (5000 lb) capacity in service prior to January 1, 1981, hopper (other than grain hopper) scales with a capacity exceeding 22 000 kg (50 000 lb), and for all vehicle, axle load, livestock, and railway track scales;
- (b) plus or minus 1 scale division for all other scales.

The values recorded shall be within applicable tolerances.

Discussion: The Committee considered the use, environment, and loads of hopper scales with capacities greater than 22 000 kg (50 000 lb) and concluded that there was justification for permitting the motion detection range to be within plus or minus 3 scale divisions. However, the Committee expressed concern over the original proposal (which applied to *all* hopper scales of the specified capacity range) due to the possible impact on grain hopper scales. The Committee agreed that it would not be appropriate to apply plus or minus three scale divisions for grain hopper scales, and therefore excluded them from the proposed modification to S.2.5.1.

320-10 V UR.1.5. Recording Elements for Class III L Scales

(This item was adopted.)

Source: Norfolk Southern Railroad

Recommendation: Add a new paragraph UR.1.5. Recording Elements for Class III L Scales as follows:

UR.1.5. Recording Element, Class III L Railway Track Scales. - Class III L Railway Track Scales must be equipped with a recording element. [Nonretroactive as of January 1, 1996.]

Discussion: Norfolk Southern (NS) tests a static, full-draft, dual platform railway track industry-owned scale which is under a weight agreement with NS; the scale has had a history of weight discrepancies. The Superintendent of Scales in the jurisdiction was asked to investigate and to try to resolve the discrepancies. It was determined that there were some mechanical problems; however, the primary reason for the discrepancies was incorrect reading and transcribing of the weight information. The scale did not have a recording device and the operator was weighing cars coupled-in-motion and writing down the weight of each car when he thought the car was on the scale, which was approximately 50 yards from the control tower. NS asked the company to provide weight tickets; however, the company noted that Handbook 44 does not require a recording element for weighing devices. Such weight discrepancies would not likely have occurred if the operator had been able to obtain a recorded weight. It is argued that recording elements are necessary to ensure accurate weighing transactions, ensure the integrity of the weight, provide a good data trail, and minimize human error.

AREA Committee 34 voted to include in part 2 of the AAR Scale Handbook the requirement that "All automatic indicating and fully automatic indicating scales shall be recording scales." Effective January 1, 1994.

During its discussions at the Interim Meeting, the Committee considered the possibility of limiting the proposed requirement to certain capacities of scales. The Committee also considered a proposal to limit the requirement to railway track scales, however, the Committee believes the requirement should apply to all capacities and applications of Class III L scales.

Following the Interim Meeting, the Committee received comments which indicated significant opposition to proposing a requirement that would apply to all Class III L scales. In view of these comments and additional comments heard at the Annual Meeting, the Committee decided to modify the proposal to limit the scope of the requirement to railway track scales.

320-11 I Markings on Load Cells

Source: Central Weights and Measures Association

Recommendation: Add the following sentence to Note 11 of Table S.6.3. (b) of Handbook 44:

Effective January 1, 1996, all required markings shall be placed directly on the load cell. An accompanying document shall no longer be substituted. [Nonretroactive as of January 1, 1996.]

Discussion: Weights and measures frequently encounter installations in which the certificates for the load cell (which contain required marking information) are not with the scales at the time of inspection. Owners do not understand the importance of keeping the certificates and frequently fail to do so. Even on new installations, the service companies fail to leave certificates. Another problem is that the information marked on the load cell (specifically, the v_{min}) may not agree with that on the document accompanying the load cell.

Some manufacturers already include the required information directly on the load cells, and the required information appears to fit easily on a fairly small label. Opposing arguments note that load cells come in many shapes and sizes, and very small load cells may not accommodate this marking information.

The Committee is amenable to reducing the "size" of the information and recognizing a standardized placement and abbreviation of the marking information. The Scale Manufacturers Association has offered to develop a standardized format.

The Committee recognizes that accessibility of the marking information can sometimes be a problem; however, it has no recommendations for addressing this aspect. The Committee encourages input for addressing the issue of accessibility. This concern arises not only in large capacity scales, but also in smaller capacity bench and counter scales which use load cells with separate NTEP CCs.

The Committee recognizes that a number of questions still remain concerning how the inspector will access the marking information. The Committee also recognized comments that indicate that jurisdictions have found successful mechanisms for ensuring that the owner or operator maintain the necessary documentation for the equipment. The Committee believes that additional work is needed to resolve the questions surrounding this issue; consequently, the Committee is changing the status of this item to informational.

320-12 I Marking of Scale Multiples

Source: Central Weights and Measures Association

Discussion: Over the past several years, a number of changes in the Scales Code have refined the process of assembling scale systems that are metrologically compatible. The most recent addition, S.5.4.(b), describes a mathematical relationship between the scale multiple and the v_{min} of the load cell used in the scale system, as shown below.

$$(b) \quad v_{min} \leq \frac{d}{\sqrt{N} \times (\text{scale multiple})} \quad \text{for scales with lever systems.}$$

An important issue, not fully addressed in Handbook 44, is how to determine the scale multiple. Without this information, it is impossible for the field official to easily determine the suitability of load cells when interfaced with a "lever system scale." Having the scale multiple marked with the scale's other required markings removes this obstacle and facilitates initial system testing and suitability determination for replacement load cells.

A proposal was made to add a nonretroactive requirement to mark the scale multiple on the device if the multiple is greater than 1. This requirement would be added to Table S.6.3a under the category of "Weighing and load-receiving element not permanently attached to indicating element."

It has been reported that the levers of some scales have notches for selectable ratios, allowing the multiple of the scale to be adjusted over a limited range. For devices with adjustable multiples, the manufacturer would be faced with marking each of the various multiples offered. As an alternative, the Committee may wish to consider requiring that the scale be marked with the multiple that reflects the "worst case" situation. Examining the equation specified in S.5.4.(b) for scales with lever systems, a large scale multiple would result in a smaller value on the right side of the equation than a small scale multiple. Consequently, if the equation is satisfied using the largest possible scale multiple, the equation would also be satisfied using smaller scale multiples declared by the manufacturer.

During review at the Interim Meeting, two other issues were raised that require further consideration: (1) The question of how to calculate the multiples for levertronic devices since the multiple of the scale may vary according to the placement of the load cell in the scale; and (2) The question of whether or not this requirement will significantly benefit weights and measures officials and industry. The requirement is nonretroactive; therefore, it will only apply to new scales. In general, only older lever-system scales not covered by this requirement will be retrofitted with load cells; it is unlikely that a device owner will buy a new mechanical scale and convert it to an electromechanical device. Consequently, the requirement may not resolve the problem of determining the scale multiple for the type of device for which determining the scale multiple is most likely to be needed.

The Committee recognizes that instructions must be provided to assist field officials and servicepersons for calculating scale multiples. The Committee accepts SMA's offer of assistance in developing procedures or formulas for eventual inclusion in Handbook 44, and it encourages other comments and suggestions for addressing this issue.

320-13 W S.6.5. Markings; Use of the →0/T← Mark

(This item was withdrawn.)

Source: Ohaus Corporation

Discussion: At the Interim Meeting, the Committee considered a proposal to add the following paragraph to the Scales Code:

S.6.5. Scales with capacities less than 220 lb that do not have separate indications for the customer and vendor, that do not calculate pricing information, and do not display NET, GROSS, or TARE indications, may use the international pictogram "→0/T←" to mark the Rezero key.

The opposing argument to this proposal is that Handbook 44 requires that a clear indication be given when tare has been deducted. If tare is taken using a combination zero/tare key, the scale cannot distinguish between a zeroing operation and a tare operation; therefore, no indication is given that tare has been taken.

The International Recommendation R76 on Nonautomatic Weighing Instruments accepts the use of a single key (marked "→0/T←") for the operation of both zero and tare functions. When using this key, the device is not required to indicate "NET" during the tare operation. The two exceptions that this is not permitted follows: "Direct Sales to the Public" and "Direct Sales to the Public with price indication." In both instances, the term "Direct Sales to the Public" indicates those types of device that have a separate indication for the consumer and the "vendor." This exception is further limited to those devices with a capacity not greater than 100 kg (220 lb).

Required labeling is different for the U.S. and European markets although the device operation is identical. The use of a "Rezero" key has been and is an acceptable function on devices submitted in U.S. markets; however, the use of "→0/T←" is not permitted in the United States unless the device is capable of clearly indicating when tare has been taken. In addition, the term "direct sales" has different meanings in the United States and in Europe. The European Union typically denotes direct sale devices as those with two displays where the consumer is provided weight and/or price information directly from the device.

The Committee does not believe that adequate information has been provided to justify recognizing the use of the →0/T← mark and believes that its use is inconsistent with the use of the term tare in Handbook 44. Comments made at the Interim Meeting would oppose incorporating references to individual pictograms into Handbook 44. The Committee requests additional input; if additional input is not received by the July meeting the Committee will withdraw the item from its agenda.

At the Annual Meeting, the Committee noted that it had little input on this item since the Interim Meetings. In the absence of significant support, the Committee is withdrawing the item.

320-14 VC Variable Division Unit Scale; Definition and Reference in Paragraph S.5.3.

(This item was adopted as part of the consent calendar.)

Source: Weigh-Tronix, Inc.

Recommendation: Modify paragraph S.5.3. as follows:

S.5.3. On a variable division value (multirange) multi-interval scale and multiple range scale, the value of "e" shall be equal to the value of "d."²

² See Footnote 1 to Table 3, Parameters for Accuracy Classes.

Delete the definition for variable division unit scale from the Definitions section of Handbook 44 and replace it with definitions for multi-interval scale and multiple range scale as follows:

~~variable division unit scale. A scale so designed that the value of the verification scale division (e) in the same unit of weight, increases at certain load values within the weighing range of the scale. (Amended 1986) [2.20]~~

multi-interval scale. A scale having one weighing range which is divided into partial weighing ranges, each with different scale intervals, with the weighing range determined automatically according to the load applied, both on increasing and decreasing loads.

multiple range scale. A scale having two or more weighing ranges with different maximum capacities and different scale intervals for the same load receptor, each range extending from zero to its maximum capacity.

Discussion: The terminology in Handbook 44 for multiple interval and multiple range scales, last changed in 1986, is not consistent with that in NCWM Publication 14, National Type Evaluation Program checklists and test procedures. The terminology is also inconsistent with references and definitions used in OIML. The inconsistency between NCWM Publication 14 and Handbook 44 has caused confusion in interpreting requirements for these devices, and the differences with OIML have created difficulties for scale manufacturers in marking and designing these devices. Changes are suggested to Handbook 44 to eliminate inconsistencies in terminology and to clarify the use of the terminology.

The NTETC Weighing Sector has studied this proposal as it applies to type evaluation and has accepted the new terminology. Few additional comments were received on this item at the Interim Meeting.

Belt-Conveyor Scale Systems

321-1 VC UR.2.2.1. For Scales Not Installed by the Manufacturer; Concave Curve

(This item was adopted as part of the consent calendar.)

Source: National Type Evaluation Technical Committee Belt-Conveyor Scales Sector

Recommendation: Modify paragraph (c) as follows to permit the installation of a belt-conveyor scale when there is a concave curve between the loading point and the scale.

UR.2.2.1. For Scales Not Installed by the Manufacturer. - Unless the scale is installed in a short conveyor designed and furnished by the scale manufacturer or built to the scale manufacturer's specifications, the conveyor shall comply with the following minimum requirements:

...

- (c) ~~There shall be no concave curve in the conveyor between the scale and the loading point. If there is a concave curve in the conveyor between the scale and the loading point, the scale shall be installed so that the belt is in contact with the idlers at all times for at least 6 m (20 ft) or 5 idler spaces, whichever is greater, before and after the scale.¹ A concave curve beyond the scale shall start no closer than 12 m (40 ft) from the scale.~~

¹~~The performance of a belt-conveyor scale may be adversely affected by a concave curve in the conveyor that is located between the loading point and the scale. Therefore, whenever possible, a belt-conveyor scale should not be installed with a concave curve in the conveyor between the loading point and the scale.~~

Discussion: Many installations of belt-conveyor scales have a concave curve between the loading point and the scale. These scales were installed by the manufacturer; hence, they are exempt from the requirements of

UR.2.2.1., which apply only to scales not installed by the manufacturer. The concave curve would have to be removed from the installation if the system were updated by other than the original equipment manufacturer. This limits the options for the scale user.

At its October 1994 meeting the Belt-Conveyor Scales Sector was asked to consider permitting a concave curve between the scale and loading point. The discussion focused on how the concave curve affects the performance of the belt-conveyor scale, and what would be an adequate distance between the curve and the scale to limit the curve's influence on the scale. It was noted that the concave curve prevents the belt from contacting the idlers, thus producing a false zero.

The Sector acknowledged that, to the extent possible, scales should not be installed with a concave curve between the loading point and the scale. However, the Sector recognized that it may not always be possible to eliminate a concave curve from an installation. In those instances, by placing an adequate distance between the scale and the end of the curve, the scale can be installed without being affected by the curve.

To ensure that the curve does not affect the scale's performance, the Sector agreed that a minimum distance of 6 meters or 5 idler spaces, whichever is greater, should be specified. This distance is consistent with current installation practices for scales installed by the manufacturer.

No additional comments were received on this item at the Interim Meeting.

Liquid-Measuring Devices Code

330-1 V Guidelines for Applying S.2.1.1. Vapor Eliminators on Loading Rack Meters

(This item was adopted.)

Source: NCWM S&T Committee

Recommendation: Adopt the following guidelines for use in applying paragraph S.2.1.1. Vapor Eliminators on Loading Rack Meters for inclusion in NCWM Publication 3, *Policy, Interpretations, and Guidelines*, in Examination Procedure Outline No. 25 for Loading-Rack Meters, and in National Training Program Module 19, Loading-Rack Meters. The guidelines are not intended for inclusion in Handbook 44.

The following guidelines, not intended to be all-inclusive, are for use by weights and measures officials to identify wholesale metering system applications in which an air eliminator is not needed. Jurisdictions may find it necessary and appropriate to deviate from these guidelines or to implement additional requirements based upon specific applications. These guidelines are to be used for systems dispensing refined petroleum products, such as diesel fuel, distillate, gasoline, fuel oil, kerosene, light oil, and spindle oil, but excluding lubricating oils, heated petroleum products, and compressed gases.

1. The storage tank is above ground.
2. Means are provided to ensure that the level of liquid in the storage tank is such that no air or vapor can be drawn into the piping to the measuring system, and that the delivery is inhibited and cannot be initiated unless the tank contains sufficient product. These means may consist of (a) low level sensors interlocked to the pump, or (b) an automatic tank gauging system, or (c) a terminal automation system which monitors inventory and has automatic daily reconciliation against product receipts and sales, and which is further backed up by manual tank gauging.
3. The pump is installed so that no section of its suction piping exceeds the elevation of the minimum operating level of the liquid in the tank.
4. The pump supplying the meter is a non-self-priming centrifugal pump.

5. The pump is installed so that there is no possibility of product vaporization at the pump inlet; that is, the pump inlet pressure is not less than the net positive suction head for that pump when the storage tank is at its minimum operating level.
6. Where the installation contains control or automatic valves, the sequence of valve openings begins at the control valve nearest the storage tank and ends at the control valve downstream of the meter.
7. There is no common piping between the installation intended for delivery of the product through the meter and the installation intended for the receipt of product into storage tank unless proper isolation valves are provided.

The above guidelines are for evaluating a system and are not intended to be all inclusive.
For all other installations, an effective automatic air eliminator is required.

Discussion: At its July 1994 Annual Meeting, the NCWM adopted a new paragraph, S.2.1.1. Vapor Eliminators on Loading Rack Meters. It requires a loading rack metering system to be equipped with a vapor or air eliminator or other automatic means to prevent the passage of vapor and air through the meter unless the system is designed or operationally controlled by a method, approved by the weights and measures jurisdiction having control over the device, such that no air or vapor can enter the system. When this paragraph was adopted, the S&T Committee recognized that guidelines must be established to permit a uniform interpretation of this paragraph by weights and measures officials and device owners. These guidelines should enable the weights and measures official to determine whether the design or operational control of a loading rack metering system is adequate to prevent air and/or vapor from entering the system or if an air eliminator is required.

The Committee distributed proposed guidelines to the regional weights and measures associations based on guidelines prepared by Canada's Legal Metrology Branch for use by their field officials in assessing the operation and design of loading rack meter systems. At the Interim Meetings, the Committee considered these guidelines and other guidelines submitted by Chuck Michell, Shell Oil, on behalf of the American Petroleum Institute (API).

Following discussions at the Interim Meeting, the Committee decided to propose the guidelines submitted by API. Several items (6,7,8, and 9) from the original proposal distributed to the regions are not included in the API proposal. The Committee was advised that, due to regulatory requirements applied by other U.S. agencies, it is not necessary to include these items in the guidelines for applying Handbook 44 paragraph S.2.1.1.

The Committee has requested feedback, provided by the API, on how well these guidelines can be implemented and asks weights and measures jurisdictions for input on any difficulties they anticipate in applying the guidelines.

330-2 V S.3.1. Diversion Prohibited

(This item was adopted.)

Source: Office of Weights and Measures

Recommendation: Modify paragraph S.3.1. as follows:

S.3.1. Diversion Prohibited of Measured Liquid - ~~It shall not be possible to divert No means shall be provided by which~~ any measured liquid can be diverted from the measuring chamber of the meter or its discharge line.

Two or more delivery outlets may be installed only if automatic means are provided to ensure that:

- (a) liquid can flow from only one outlet at a time, and
- (b) the direction of flow for which the mechanism may be set at any time is clearly and conspicuously indicated.

A manually controlled outlet that may be opened for purging or draining the measuring system shall be permitted only when the system is measuring food products. Effective means shall be provided to prevent passage of liquid through any such outlet during normal operation of the measuring system and to inhibit meter indications (or advancement of indications) and recorded representations while the outlet is in operation.

(Amended 1991)

Discussion: In 1994, the NCWM voted to modify Milk Meters Code paragraph S.3.1. Diversion of Liquid to be Measured. The modification permits a manually controlled outlet for purging or draining the measurement system provided that the outlet cannot be used during normal operation. The scope of the language was originally intended to apply only to mass flow meters used to dispense milk; however, the S&T Committee agreed that such a provision would also be appropriate for other types of metering technology. Since the NCWM agreed to make the modification to the Milk Meters Code, the S&T Committee believes that a similar modification would be appropriate for the Liquid-Measuring Devices Code.

Based on discussions of this item at the Interim Meeting, the Committee decided to add language to the proposal to specify that device indications should be inhibited during operation of the manually controlled outlet. Questions were also raised concerning whether or not more specific language should be added to the corresponding paragraph in the Milk Meters Code.

The Committee recognizes that there may be applications other than food products in which the system must be purged or drained between deliveries of certain products to prevent product contamination; however, the Committee has not heard adequate justification for manually controlled outlets in these applications.

330-3A I T.2.3.4. Automatic Temperature Compensating Systems; Accuracy of the Temperature Sensor

Source: Carryover Item 330-3

Recommendation: Add the following definition to the Definitions section of Handbook 44.

small volume prover. - A stationary or portable testing device (prover) that has a known volume between detectors of less than 100 gallons, and provides for less than 10 000 direct pulses from the meter during a single pass of a displacer between detectors, ~~and is used to test the performance of meters with a discharge rate in excess of 300 gallons per minute.~~ The small volume prover measures product in a dynamic state and typically uses pulse-interpolation or similar techniques to achieve high resolution.

Modify T.2.3.4. as follows to address the application of tolerances when a small volume prover is used.

T.2.3.4. Automatic Temperature Compensating Systems. - Except for tests performed using a small volume prover, the difference between the meter error for results determined with and without the automatic temperature compensating system activated shall not exceed:

- (a) *0.2 percent of the test draft for mechanical automatic temperature compensating systems; and*
- (b) *0.1 percent of the test draft for electronic automatic temperature compensating systems.*

*The results of each test shall be within the applicable acceptance or maintenance tolerance.
[Nonretroactive as of January 1, 1988.]*

When testing is performed using a small volume prover, the temperature probe shall be accurate to within $\pm 0.5^{\circ}\text{C}$ (1°F).

Discussion: (*This item was split into two parts as a result of discussions at the Interim Meeting; one item to address current proposals to modify Handbook 44 and one item to address work being done to support future modifications.*)

Based on comments made at the Interim Meeting, the Committee noted that, in addition to small volume provers, references to other types of provers, such as pipe provers and ball-type provers, along with corresponding definitions, should eventually be considered for incorporation into the language. Since the focus of the testing performed in conjunction with this item has addressed only small volume provers, the Committee did not want to include specific definitions for or references to other types of provers in the recommendation at this time.

The Committee agreed to put a strikeout through the present reference to "300 gallons per minute" in the definition; the Committee wants clarification of its inclusion before making a final decision to delete it.

The Committee had retained this item on its agenda to allow additional time for data to be collected on the use of small volume provers. (See also Item 330-3B for discussion of comparison testing on small volume provers.) The following discussion is excerpted from the S&T Committee's 1994 final report as background information:

The S&T Committee originally specified the tolerance for automatic temperature compensating systems in terms of the meter test results for compensated and uncompensated runs because the temperature probe is often at a considerable distance from the meter in many loading rack systems. In addition, many installations do not have a thermometer well adjacent to the temperature probe that can be used to compare the accuracy of the system temperature probe to a reference thermometer. The normal test draft for the application of the tolerance is a neck-type, large volume prover.

The Committee received comments indicating that the tolerance expressed in T.2.3.4. is not practical when small volume provers are used. The Committee understands the term "small volume prover" to refer to a compact prover rather than to a neck-type prover of a smaller capacity. Due to the small size of the test draft when small volume provers are used, the tolerance as a percentage of the test draft is too small to be used to check the accuracy of the temperature probe. The Committee was asked to consider expressing the tolerance for a temperature probe in degrees, such as 1 °C (2 °F), particularly when small volume provers are used to test meters, and to consider specifying all tolerances for automatic temperature compensating systems as a temperature value instead of a deviation in the test results for the compensated and uncompensated test results.

Some members of industry expressed opposing views to these comments, indicating that evaluating the performance of the temperature probe alone and permitting a tolerance of 2 °F is excessive, suggesting that the proposal would inappropriately relax the tolerances. Comments at the Interim Meeting indicated that it is reasonable to specify a tolerance for the temperature probe, but the variance should be no more than 0.5 °C or 1 °F.

During the discussion, it was pointed out that the temperature taken by a small volume prover is not representative of the temperature of the entire delivery: it represents only the temperature of the product at a given time during the delivery. The performance of the probe represents only part of the overall performance of the measuring system. Consequently, it was stated that the application of the tolerances as currently written is inappropriate for small volume provers and should be changed as proposed.

The API has provided to the S&T Committee four sections from its Manual of Petroleum Measurement Standards to assist the Committee in its understanding of the design and use of small volume provers. The Committee has received input concerning typical sizes of small volume provers and has identified typical configurations used in the applications addressed by paragraph T.2.3.4.

The Committee also received information from Mr. Chuck Michell, Shell Oil Company, concerning the potential difference in product temperature if the temperature probe for the metering system is not adjacent to the meter. He noted that API Chapter 7.2. indicates "Where it is impractical to mount the temperature sensor in the meter, it should be installed either immediately downstream or upstream of the meter... Where several meters are manifolded in parallel, one temperature sensor located in the total liquid stream is acceptable,... providing the temperature agrees within 1.0 °F of the meter temperature."

The Committee concluded at the Annual Meeting that additional clarification is needed to identify how the proposed tolerances will apply and to what component of the measuring device or proving system they will apply. The Committee plans to continue work with industry on this issue and is making the item informational to allow additional time to study the issue.

330-3B I Recognition of Small Volume Provers in Routine Field Testing

(This item was added to the Committee's agenda as a result of discussions during the Interim Meeting.)

Source: Carryover Item 330-3; NCWM S&T Committee

Discussion: This item is related to the work in conjunction with 330-3A and was added as a separate item to highlight work on comparing the performance of small volume provers with that of volumetric neck-type provers. Since this may result in recommendations to revise Handbook 44 to recognize the use of small volume provers in routine field testing, the Committee wanted to inform NCWM members and provide a forum for reporting progress.

The issue of small volume provers was discussed at the October 1993 meeting of the National Type Evaluation Technical Committee (NTETC) Measuring Sector. Mr. Tim Scott, Brooks Instruments, is working on a project to compare the performance of a small volume prover with that of a conventional neck-type prover. Some of the difficulties that might typically be encountered in the testing of temperature compensating systems when using a small volume prover might be observed during this testing. These devices are currently accepted for use in routine field tests by industry and in NTEP evaluations, and some weights and measures jurisdictions currently permit their use when witnessing tests of larger meters or meters that are used to deliver certain products. Mr. Scott seeks eventual NCWM acceptance through the NCWM Metrologists' Group.

Comparison testing of small volume and volumetric neck-type provers performed by Brooks Instruments has been witnessed by representatives from Florida Weights and Measures and also by Ron Murdock and other representatives of North Carolina Division of Standards. The information is being reviewed by the metrologists' group. If the assessment is favorable, the Committee may propose changes to paragraph N.3. as a future agenda item. If review by the Metrologist's Group is favorable, the S&T Committee anticipates adding an item to its 1996 agenda to propose modifications to Handbook 44 to recognize the use of small volume provers in routine field testing. This issue will continue to be developed by industry.

The calibration procedures for small volume provers must be done very carefully to obtain a valid calibration; proper operation of small volume provers is very operator-dependent. Dr. George Mattingly, NIST, has said that companies manufacturing small volume provers (piston provers) must participate in a round robin calibration to verify that the design and calibrations of their small volume provers are correct.

330-4 W Revisions to Tolerances for Liquid-Measuring Devices Code

(This item was withdrawn.)

Source: NCWM S&T Committee

Discussion: At its July 1994 meeting, the NCWM adopted a new table, Table T.2. in the Mass Flow Meters Code, that establishes accuracy classes for mass flow meters. Specified for each accuracy class in the table is an application or commodity to be measured along with the acceptance and maintenance tolerance value for each accuracy class. The table and accompanying repeatability requirements are repeated below for reference.

T.2. Tolerances. - The tolerances for mass flow meters for specific liquids, gases, and applications are listed in Table T.2.

Table T.2. Accuracy Classes for Mass Flow Meter Applications

Accuracy Class	Application or Commodity Being Measured	Acceptance Tolerance	Maintenance Tolerance
0.3	Loading rack meters, vehicle-tank meters (excluding LP Gas), home heating oil, milk and other food products, large capacity motor-fuel dispensers (maximum discharge flow rates greater than 100 L or 25 gallon per minute), all other liquid applications not shown in the table where the minimum delivery is at least 700 kg (1500 lb)	0.2%	0.3%
0.5	Small capacity (retail) motor-fuel dispensers, agri-chemical liquids, all other liquid applications not shown in the table	0.3%	0.5%
1.0	Anhydrous ammonia, LP Gas (including vehicle tank meters)	0.6%	1.0%
2.0	Compressed natural gas as a motor fuel	1.5%	2.0%
2.5	Cryogenic liquid meters, liquefied compressed gases other than LP Gas	1.5%	2.5%

T.3. Repeatability. - When multiple tests are conducted at approximately the same flow rate, the range of the test results for the flow rate shall not exceed:

- (a) 0.2 percent for retail liquid motor fuel devices; and
- (b) 40 percent of applicable tolerance for all other devices listed in Table T.2.

Measuring device manufacturers indicated that a uniform tolerance structure for all metering codes would be desirable and would provide for a "level playing field" for metering devices; in addition, they viewed the approach of establishing accuracy classes and specified applications as a favorable approach for other codes.

While the approach of establishing accuracy classes and corresponding applications for all metering devices has received favorable comments, concern has been raised that the tolerance structure for high volume retail motor-fuel dispensers specified in the Table T.2. above may be overly restrictive compared to present requirements.

During discussions at the Interim Meeting, the Committee indicated that it is amenable to an approach in which applications or commodities are established for a given accuracy class along with acceptance and maintenance tolerances. The Committee has indicated its interest in developing a single tolerance table for all devices, but recognizes that a number of questions remain concerning how a table similar to that in the Mass Flow Meters Code might be developed for the Liquid-Measuring Devices Code. These questions include:

- Whether or not present readability and uncertainty constraints would enable a field inspector to apply a tolerance of 0.2 percent of test draft in some cases.
- Whether the tolerance for high-volume retail motor-fuel dispensers, as presented in the Mass Flow Meters Code, would be unreasonable for other metering technologies. In addition, there is no clear indication that mass flow meters can meet the tolerances now in the Mass Flow Meters Code for high-volume retail motor fuel dispensers since mass flow meters are not typically found in these applications.
- Whether the tolerance for vehicle-tank meters in Table T.2. is too large compared to the present vehicle-tank meter tolerance.

- The need to clarify the repeatability tolerance to indicate that the 0.2 percent in paragraph T.3. part (a) refers to 0.2 percent of the test draft.
- The need to specify in the Mass Flow Meters Code a separate tolerance for "special tests" and "normal tests" as the Liquid-Measuring Devices Code does.

The Committee intends that this item remain informational to allow additional time to study the impact of such changes on other types of liquid-measuring devices. However, the Committee recognizes that an equitable approach to tolerance application must be found for all metering applications.

At the Annual Meeting the Committee concluded that additional study is required on this issue before recommendations to change the tolerances may be considered. Because of this and the concerns expressed to the Committee on how this might impact existing devices in specific applications, the Committee is withdrawing this item.

330-5 VC T.2.3.1. Measurement of Agri-Chemical Liquids; Tolerances

(This item was adopted as part of the consent calendar.)

Source: NIST Office of Weights and Measures

Recommendation: Modify paragraph T.2.3.1. and delete the accompanying table as follows:

T.2.3.1. Measurement of Agri-Chemical Liquids. - Acceptance tolerances and maintenance tolerances shall be 0.3 percent and 0.5 percent, respectively.:

	Acceptance	Maintenance
Normal test	0.5%	1.0%
Special test	1.0%	1.0%

The Committee is open to considering a special test tolerance of 0.5 percent acceptance and maintenance if adequate justification for the larger acceptance tolerance for special tests is presented to the Committee before the annual meeting in July 1995.

Discussion: Comments over the years have suggested that the agri-chemical meter tolerances should be smaller based upon the high cost of the products. The Committee agrees that a small tolerance is warranted, but noted at the Interim Meeting that this assessment is based on more than the price alone. The Committee also recognizes that technology has advanced considerably over the years and the equity of the measurement must be considered.

The change proposed above corresponds to the tolerance for agri-chemicals adopted in Table T.2. of the Mass Flow Meters Code. The Committee is interested in clarifying the types of products that should be classified as agri-chemical liquids. A suggestion made at the Interim Meeting is to use the family of liquids table developed by the NTETC Measuring Sector, a copy of which is included in Appendix B to this report. This table was developed for identifying families of liquids for positive displacement meters during type evaluation. Additional comments and suggestions concerning classifying agri-chemicals are encouraged.

The Central indicated an interest in seeing the tolerances tightened for agri-chemicals; comments also indicated an interest in seeing data supporting the tighter tolerances.

330-6

V

S.2.2. Provision for Sealing; Audit Trail Requirements

(This item was adopted.)

Source: Southern; Gasoline Pump Manufacturers Association (GPMA)

Recommendation: Modify paragraph S.2.2. Provision for Sealing and the accompanying Table S.2.2. as follows to permit remote configuration on retail motor-fuel dispensers:

S.2.2. Provision for Sealing. - Adequate provision shall be made for an approved means of security (e.g., data change audit trail) or physically applying security seals in such a manner that no adjustment may be made of:

- (a) any measurement element, or
- (b) any adjustable element for controlling delivery rate when such rate tends to affect the accuracy of deliveries.

When applicable, the adjusting mechanism shall be readily accessible for purposes of affixing a security seal.

(c) *Except for retail motor-fuel dispensers, audit trails shall use the format set forth in Table S.2.2. [Nonretroactive and enforceable as of January 1, 1995.]*

~~(d) Retail motor fuel dispensers shall not have remote configuration capabilities and shall be sealed according to category 1 devices in Table S.2.2.~~

~~[Nonretroactive and enforceable as of January 1, 1995.]~~

(Amended 1991, 1993, and 1995)

Table S.2.2. Categories of Device and Methods of Sealing

<i>Categories of Device</i>	<i>Method of Sealing</i>
<i>Category 1: No remote configuration capability</i>	<i>Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.</i>
<i>Category 2: Remote configuration capability, but access is controlled by physical hardware.</i> <i>Device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode or shall not operate while in this mode.</i>	<i>[The hardware enabling access for remote communication must be at the device on-site. The hardware must be and sealed using a physical seal or and two event counters: one for calibration parameters and one for configuration parameters an event counter for calibration parameters and an event counter for configuration parameters. The event counters may be located either at the individual measuring device or at the system controller; however, an adequate number of counters must be provided to monitor the calibration and configuration parameters of the individual devices at a location. If the counters are located in the system controller rather than at the individual device, means must be provided to generate a hard copy of the information through an on-site device.]*</i> <i>[*Nonretroactive as of January 1, 1996]</i>

<p><i>Category 3: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password)</i></p>	<p><i>An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change , and the new value of the parameter. A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to ten times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)</i></p>
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[Nonretroactive and enforceable as of January 1, 1995.]

(Table added 1993)

Discussion: GPMA acknowledged that the current audit trail requirements for retail motor-fuel dispensers were the result of a compromise that broke a stalemate on the development of audit trail criteria for inclusion in Handbook 44. However, GPMA feels that the current code hampers technological advancement. Additionally, due to recent interpretations dealing specifically with remote configuration and applications of the code [to devices not covered by the LMD Code], GPMA feels that an inequitable marketplace is being created because the LMD Code specifically excludes retail motor-fuel dispensers from some of the benefits of audit trail technology.

When the audit trail criteria were added to Handbook 44, many participants in the process acknowledged that the adopted criteria represented a starting point for audit trail criteria in Handbook 44; it was acknowledged that additional modifications might be needed to facilitate the introduction of the technology into the marketplace.

Although audit trail criteria were added to the LMD Code of Handbook 44, specific audit trail criteria for devices covered by other codes have not been addressed. Lacking specific criteria for devices not covered by the LMD Code, NTEP has applied the criteria specified in the LMD code to these devices to the extent it deemed appropriate for the specific application. In its review of this issue, the Southern S&T Committee emphasized the importance of making criteria consistent for devices which may be used in the same application, but to which different codes apply. For example, the mass flow meter code applies to a mass flow meter, but the LMD Code applies to a positive displacement meter used in the same application.

In its discussions of this item at the Interim Meeting, the Committee reviewed proposals from MicroMotion, GPMA, and the Southern to modify the current requirements for audit trails to permit remote configuration on retail motor-fuel dispensers. The Committee agreed that a modification to permit remote configuration for these devices is appropriate and concluded that the following provisions must be met in order to permit this feature:

- The hardware for enabling access for remote configuration must be on-site. The Committee was not amenable to having an off-site device control access to the remote configuration mode; the Committee did agree that the hardware could be located at the individual device or it could be located on the device through which the individual device is remotely configured.
- The hardware must be sealed using a physical seal *and* two event counters must be included. This differs significantly from the original criteria and would affect retail motor-fuel dispensers as well as other Category 2 liquid-measuring devices. However, the Committee felt that this additional requirement is needed to provide added security for the remote configuration option, particularly since the Committee is proposing that the hardware for enabling the remote configuration mode does not have to be located at the individual device.
- The event counters may be located either at the individual measuring device or the system controller (e.g., console or control box). The Committee has included a requirement which specifies that, if the event counters are located in the console or controller rather than at the individual device, means must be provided to generate a hard copy of the information through a device on-site.

The Committee feels that two event counters must be included for each individual main element. In its recommendation, the Committee has specified "meter, hose, product type, etc." as examples of the "main

element." The Committee requests input on whether or not these examples are appropriate and on the impact of the requirement if written this way.

- The Committee reaffirms its previous position on central event loggers: if changes are made at the individual dispenser, rather than through a remote device, then the event counters must reflect the changes accordingly.

During the discussion of this issue, it was noted that some Category 2 devices do not provide an *indication* of when the device is in the remote configuration mode; rather, the device will not operate while in this mode. The Committee agreed that this method of operation meets the intent of the requirement and does not allow the device to appear to be in a normal operating mode when it is actually in the remote configuration mode. The Committee agreed that additional text should be added to Category 2 of Table S.2.2. to clarify that this method of operation is acceptable.

(A related proposal was submitted by Micromotion, Inc. to address audit trail criteria for mass flow meters. See Item 337-2 for the discussion of this issue as it pertains to the Mass Flow Meters Code.)

330-7 V UR.3.3. Computing Device

(This item Failed.)

Source: Southern Weights and Measures Association

Recommendation: Modify paragraph UR.3.3. to delete section (d) as follows:

UR.3.3. Computing Device. -

- Any computing device placed into service after January 1, 1990, in an application where a product or grade is offered for sale at more than one unit price (excluding fleet sales and other price contract sales), shall be used only for sales for which the device computes and displays the sales price for the selected transaction. Individual single unit-price computing devices installed to replace existing devices or to add to station capacity are exempt from this requirement.
(Added 1989) (Amended 1992)
- A computing device shall be used only for sales for which the device computes and displays the sales price for the transaction.
(Effective and retroactive as of January 1, 1999)
(Added 1990)
- A truck stop dispenser used exclusively for refueling trucks is exempt from the requirements in (a) and (b) if all purchases of fuel are accompanied by a printed receipt of the transaction containing the applicable price per liter or gallon, the total liters or gallons delivered, and the total price of the sale.
(Added 1993)
- ~~Unless a truck stop dispenser used exclusively for refueling trucks complies with S.1.6.4.1. (Display of Unit Price), the price posted on the dispenser and the price at which the dispenser is set to compute shall be the highest price for any transaction which may be conducted.~~
(Added 1993)

Discussion: Section (c) of paragraph UR.3.3. exempts truck stop dispensers from having to compute sales at all displayed prices, provided that all sales are accompanied by a sales receipt showing the applicable price per liter or gallon, the total liters or gallons delivered, and the total price of the sale. Therefore, the purchaser has written evidence should a dispute arise over the transaction.

Truck stops have as many as twenty different prices, depending on contractual agreements. One truck stop operator reported to a weights and measures jurisdiction that the highest unit price is charged when bank credit cards are used. Consequently, at this facility, nineteen prices were lower than the one for the four popular bank credit cards.

To comply with UR.3.3., the station would have to discount nineteen unit prices. This is not practical since bank credit cards are a small percentage of total sales.

The discussion regarding UR.3.3. in the July 1993 final report of the NCWM clearly states that "truck stops serve a specific clientele of professional truck drivers and business persons who are informed consumers." Questions have been raised about whether or not jurisdictions are uniformly enforcing section (d) of paragraph UR.3.3.; if the section is not being enforced, it is suggested that it should be deleted.

The Committee received no comments on this item at the Interim Meeting and has received few comments from the regional associations or industry.

Vehicle-Tank Meters Code

331-1 W UR.2.2. Ticket Printer; Customer Ticket - Exemption for Aircraft Refuelers

(This item was withdrawn.)

Source: CWMA/OH Weights and Measures

Recommendation: Modify paragraph UR.2.2. to exempt aircraft refueling trucks. No specific language was submitted for consideration; however, based on the context of the submission, the following changes to the paragraph might be considered:

UR.2.2. Ticket Printer; Customer Ticket. - Except for meters used exclusively for refueling aircraft, vehicle-mounted metering systems shall be equipped with a ticket printer which shall be used for all sales where product is delivered through the meter. A copy of the ticket issued by the device shall be left with the customer at the time of delivery or as otherwise specified by the customer.
[Nonretroactive as of January 1, 1995. To become retroactive as of January 1, 1999.]

Discussion: Very few, if any, vehicle-mounted meters used to refuel aircraft now have or have ever had printers. Requiring a printer would add cost to the users of these devices, and the submitter is unaware of complaints received from customers about not having a printed ticket. An opposing argument is that the customer does not have any method to verify the delivery unless a printed ticket is provided.

The Committee has not been persuaded that this exemption is justified. The Committee is generally opposed to making exceptions. The Committee encouraged additional comments on this issue in its Interim Report; however, no additional justification was provided to the Committee.

The Committee does not feel that sufficient justification has been provided for including this exemption. Consequently, the Committee is withdrawing this item.

331-2 V A.1. Application, S.5.2. Discharge Rates, T.X. Measurement of Water; Tolerances for Vehicle-Mounted Water Meters

(This item was adopted.)

Source: Western Weights and Measures Association

Recommendation: Amend the following paragraphs to increase the tolerances for vehicle-mounted water meters.

A.1. - This code applies to meters mounted on vehicle tanks including those used for the measurement and delivery of petroleum products or agri-chemical liquids such as fertilizers, feeds, herbicides, pesticides, ~~insecticides, fungicides, and defoliants, and bulk deliveries of water.~~

(Amended 1985)

Add a new paragraph with accompanying tables to specify tolerances for vehicle-mounted water meters:

T.X. Measurement of Water. - Maintenance and acceptance tolerances shall be as shown in Table X and Table X.

**Table 1X. Tolerances for Water Meters
Normal Tests**

Meter size (inches)	Rate of flow (gal/min)	Maximum Rate			
		Meter indication		Tolerance on over- and under-registration	
		gal	ft ³		
5/8	15	50	5		
3/4	25	50	5		
1	40	100	10		
1 1/2	80	300	40	1.5%	
2	120	500	40		
3	250	500	50		
4	350	1 000	100		
6	700	1 000	100		

**Table 2X. Tolerances for Water Meters
Special Tests**

Meter size (inches)	Intermediate rate				Minimum rate				
	Rate of flow (gal/ min)	Meter indication		Tolerance on over- and under- registration	Rate of flow (gal/ min)	Meter indication		Tolerance	
		gal	ft ³			gal	ft ³	Under- registration	Over- registration
5/8	2	10	1		1/4	5	1		
3/4	3	10	1		1/2	5	1		
1	4	10	1		3/4	5	1		
1 1/2	8	50	5	1.5%	1 1/2	10	1	5.0%	1.5%
2	15	50	5		2	10	1		
3	20	50	5		4	10	1		
4	40	100	10		7	50	5		
6	60	100	10		12	50	5		

Discussion: Bulk deliveries of water to individual users and for irrigation purposes (in arid locations and areas of ground water contamination) have become common in the southwest and may become a nationwide concern. Typical water meters are not capable of meeting the tolerances presently specified in the Vehicle-Tank Meters Code. Typical positive displacement and turbine meters cannot maintain existing vehicle-tank meter tolerances because water has a low lubricity factor. Installing devices capable of maintaining these tolerances, such as mass flow meters and other specifically-designed meters, would present an unreasonable expense to the purveyors of this relatively low-cost commodity.

This proposal is consistent with the goal that the minimum measurement accuracy for a product type be the same regardless of the measurement technology. An opposing argument is that a device that cannot perform better than an accuracy of 1.5 percent may not be suitable for such an application. Newer technology, such as mass flow meters, can maintain tighter tolerances without the lubricity concerns.

The Committee recognizes that there are an increasing number of applications for commercial delivery and measurement of water. The Committee also recognizes that the tolerances in the Vehicle Tank Meters Code are more stringent than those in the Water Meters Code. Consequently, a tighter tolerance is now applied to vehicle-mounted water meters than to stationary meters. The proposed tolerances are the same as those presently in the Water Meters Code.

The Committee would like to see the tolerances for the VTM Code structured similar to that discussed in Item 330-4. However, the Committee does not anticipate that the issues discussed in Item 330-4 will be resolved this year, and it does not want to delay consideration of the changes proposed in the "Recommendation" above until that time.

331-3 W T.2. Tolerances; Revision to Correspond to Liquid-Measuring Devices Code

(This item was withdrawn.)

Source: Western Weights and Measures Association

Discussion: The Committee considered a proposal from the Western to modify the tolerances in the Vehicle-Tank Meters Code to those in correspond to the Liquid-Measuring Devices Code. Although consistency in tolerances among codes is desirable, the proposal represents an enlargement of most of the tolerances in the Vehicle-Tank Meters Code, as indicated in the following table.

Indication (gallons)	Acceptance Tolerances				Maintenance Tolerances			
	Present		Proposed		Present		Proposed	
	cubic inches	%	cubic inches	%	cubic inches	%	cubic inches	%
50	25.0	0.216	23.1	0.2	50	0.433	34.65	0.3
100	37.5	0.162	46.2	0.2	75	0.325	60.30	0.3
200	62.5	0.135	92.4	0.2	125	0.271	138.60	0.3
500	137.5	0.119	231.0	0.2	275	0.238	346.50	0.3
750	200.0	0.115	346.5	0.2	400	0.231	519.75	0.3
1000	262.5	0.114	462.0	0.2	525	0.227	693.00	0.3
1500	387.5	0.112	693.0	0.2	775	0.224	1039.50	0.3

Since devices in the field meet the existing tolerances, there is no adequate justification for expanding them. The Committee asks for additional input and justification so that members can better assess the proposal. Without additional justification for enlarging these tolerances, the Committee plans to withdraw this item from its agenda.

Background

This proposal is similar to Item 331-2 (Table 1. Tolerances for Vehicle-Tank Meters Except Milk Meters, Agri-Chemical Meters, and Mass Flow Meters) on the S&T Committee's 1994 report. Tolerances in the Vehicle-Tank Meters Code are currently expressed in cubic inches; tolerances in the Liquid-Measuring Devices Code are expressed as a percentage of the indication. In order to obtain uniformity in tolerance application, both code tolerances should be expressed as a percentage.

This proposal will make the tolerance application uniform for wholesale liquid-measuring devices whether in stationary or vehicle-mounted applications. This is also consistent with the goal that the minimum measurement accuracy for a type of product should be the same regardless of the measurement technology.

Additionally, vehicle-tank meters will frequently be tested at the same location as stationary wholesale meters (and frequently the same model of meter). This will simplify tolerance application for field officials and service persons.

Among the opposing arguments to this proposal is the fact that the proposed tolerances will be slightly larger than the current tolerances. In addition, concern has previously been expressed by Committee members that the present tolerances for stationary loading rack meters are too large. The Committee must also consider this proposal in conjunction with its discussion of Items 330-4 (Revisions to Tolerances for Liquid-Measuring Devices Code) and 330-5 (T.2.3.1. Measurement of Agri-Chemical Liquids; Tolerances). The Committee has indicated its interest in making all of the tolerances in the metering codes consistent with the tolerances adopted for the Mass Flow Meter Code.

The proposal recommends deleting Tables 1, 1a, and 2 and modifying the paragraphs under T.2. as follows:

T.2. Tolerance Values. Maintenance and acceptance tolerances shall be as shown in Tables 1, 1a and 2.

T.3-2.1. Tolerance Values on Meters used for the Measurement of Agri-Chemical Liquids. - The maintenance tolerance on normal and acceptance tolerances shall be: special tests shall be 1 percent of the indicated quantity. The acceptance tolerance on a normal test shall be 0.5 percent of the indicated quantity and on special tests, 1 percent of the indicated quantity. (Added 1985, Amended 1989)

	<u>Acceptance</u>	<u>Maintenance</u>
Normal Test	0.3%	0.5%
Special Test	0.5%	0.5%

T.2.2. Measurement of Milk - See Section 3.35. Milk Meters Table 1, Tolerances.

T.2.3. Measurement of Other Liquids. - Maintenance and acceptance tolerances shall be:

	<u>Acceptance</u>	<u>Maintenance</u>
Normal Test	0.2%	0.3%
Special Test	0.5%	0.5%

T.4-3. Repeatability. - When multiple tests are conducted at approximately the same flow rate, the range of the test results for the flow rate shall not exceed 40 percent of the applicable tolerance. (Added 1992)

At the Annual Meeting, the Committee noted that it is in favor of making the tolerance structure consistent among the various measuring device codes and improving ease of use of the tolerances, but is generally opposed to increasing well-established tolerances which can readily be met by existing devices. Consequently, the Committee is withdrawing this item.

**Liquefied Petroleum Gas and Anhydrous Ammonia
Liquid-Measuring Devices Code**

332-1 I T.4. Automatic Temperature Compensating Systems; Accuracy of the Temperature Sensor

Source: Carryover Item 332-1

Recommendation: Modify paragraph T.4. of the LPG and Anhydrous Ammonia Code as follows to address the application of tolerances when a small volume prover is used. (Note: The Committee is also considering the addition of a definition of small volume provers to the Definitions section of Handbook 44 as indicated in LMD Item 330-3A.)

T.4. Automatic Temperature Compensating Systems. - Except for tests performed using a small volume prover, the difference between the meter error for results determined with and without the automatic temperature-compensating system activated shall not exceed:

- (a) 0.5 percent of the test draft for mechanical automatic temperature-compensating systems; and
- (b) 0.25 percent of the test draft for electronic automatic temperature-compensating systems.

The results of each test shall be within the applicable acceptance or maintenance tolerance.

When testing is performed using a small volume prover, the temperature probe shall be accurate to within $\pm 0.5^{\circ}\text{C}$ (1°F).

Discussion: (See Items 330-3A and 330-B for background discussion on the liquid-measuring devices issues corresponding to this item.) Florida and North Carolina have performed meter tests using a small volume prover and a volumetric neck-type prover. The calibration procedures for small volume provers must be done very carefully to obtain a valid calibration. Dr. George Mattingly, NIST, has said that companies that manufacture small volume provers (piston provers) must participate in a round robin calibration to verify that the design and calibrations of these provers are correct. The issue of using small volume provers in routine field testing will continue to be developed by industry.

The Committee received no additional comments on this item during the Interim Meetings.

The Committee believes that additional clarification is needed to identify how the proposed tolerances will apply and to what component of the measuring device or proving system they will apply. The Committee plans to continue work with industry on this issue and is making the item informational to allow additional time to study the issue.

332-2 VC S.1.5.2. Money-Value Computations; Multi-Unit Price Applications and Exclusion for Fleet and Other Price Contract Sales

(This item was adopted as part of the consent calendar.)

Source: NIST Office of Weights and Measures

Recommendation: Modify paragraph S.1.5.2. as follows:

S.1.5.2. Money-Value Computations. - A retail device that computes money value shall be capable of computing such values for a single unit price or at each of a series of unit prices for every

~~delivery possible within either the range of measurement of the device or the range of the computing elements, whichever is less. A computing device shall compute the total sales price at any single-purchase unit price (excluding fleet sales and other price contract sales) for which the product is offered for sale at any delivery possible within either the measurement range of the device or the range of the computing elements, whichever is less.~~ The analog money value indication shall not differ from the mathematically computed money value (quantity x unit price = sales price), for any delivered quantity, by an amount greater than the values shown in Table 1.

Discussion: Paragraph S.1.6.5. of the Liquid-Measuring Devices Code requires that retail computing devices compute the total sales price at any single-purchase unit price for which the product is offered for sale. The language excludes devices used for fleet sales, other price contract sales, and truck stop dispensers from the requirement.

The number of fleet operations using LPG is increasing and device owners offer a variety of pricing options to fleets. An exclusion for fleet operations similar to that for paragraph S.1.6.5. (LMD Code) is proposed to be added to Paragraph S.1.5.2. of the LPG and Anhydrous Ammonia Code. In addition, the present language of paragraph S.1.5.2. does not clearly specify the computing capabilities required of an LPG device used to dispense products at more than a single unit price. Language similar to that use in paragraph S.1.6.5. of the LMD Code is proposed to provide consistency between the two codes. No additional comments were received on this item during the Interim Meeting.

Cryogenic Liquid-Measuring Devices Code

334-1 W S.2.4. Automatic Temperature or Density Compensation

(This item was withdrawn.)

Source: Carryover Item 334-1

Discussion: In 1992 the following proposal was submitted to reverse the action taken in 1991 which required cryogenic metering systems to be equipped with automatic temperature or density compensation systems and to inhibit meter system operation if the ATC system fails.

S.2.4. Automatic Temperature or Density Compensation. - ~~If a device is shall be equipped with automatic means for adjusting the indication and/or recorded representation of the measured quantity of the product, it shall to indicate and/or record in terms of: kilograms or pounds; liters or gallons of liquid at the normal boiling point of the specific cryogenic product; or the equivalent cubic meters (cubic feet) of gas at a normal temperature of 21 °C (70 °F) and an absolute pressure of 101.325 kPa (14.696 psia). When a compensator system malfunctions, the indicating and recording elements may indicate and record in uncompensated volume if the mode of operation is clearly indicated, e.g., by a marked annunciator, recorded statement, or other obvious means.*~~

**Nonretroactive as of January 1, 1992*

The Compressed Gas Association (CGA) and California Division of Measurement Standards (DMS) have been working to provide the Committee with information to assess the merit of this proposal. In addition to testing witnessed by members of the S&T Committee last year, California DMS has worked with the CGA to collect data to support their respective positions.

At the Interim Meeting, the Committee reviewed data presented by the DMS and CGA to determine what further action should be taken on the 1992 proposal. Prior to the Interim Meeting, the CGA again extended an offer to collect additional data should the Committee require further data to make its decision.

The compressed gas industry has been most cooperative in the study of this issue. The Committee appreciates its assistance and that of the weights and measures jurisdictions who helped to collect the data, particularly California DMS. However, the Committee has not been convinced by the information presented that temperature compensation is not needed. The method of adjusting the meters proposed by the CGA would leave little allowance for normal wear and tear on the meter, and its approach is not consistent with the Fundamental Considerations which state that adjustments must be made to bring a device as close to zero error as possible. Consequently, the Committee has withdrawn this item from its agenda.

The following excerpts from the 1995 S&T Interim Agenda are included as background information on the issue.

The CGA continues to maintain its position that temperature compensation of cryogenic meters is unnecessary due to the narrow temperature range of the liquid at delivery conditions. California DMS continues to maintain that the data collected by its field officials contradicts CGA's position.

At an April 1994 meeting, the CGA and DMS agreed that the DMS would conduct a survey of temperatures during customer deliveries to determine if deliveries were possible with temperatures outside the range that assures deliveries within applicable meter tolerances. This would either verify or refute the position that deliveries can not be made with high product temperatures, and that the pressure relief valves would sufficiently control the product temperature.

With the cooperation of industry, DMS conducted a survey of five deliveries of liquid nitrogen to determine delivery pressures and temperatures and the capabilities of the delivery systems. In all cases, the recorded temperatures were above those that would have allowed the meter to perform within maintenance tolerances if the meters had been calibrated at the normal boiling point of the liquid. The average delivered volume difference when comparing delivery temperatures to the normal boiling point represents approximately 6 percent overregistration. Additionally, most of the deliveries were made above -186 °C, at temperatures which CGA contended delivery systems would not function.

Summarizing the results of the survey, DMS noted that, although industry has been cooperative in assisting in gathering data, the data contradicts the CGA's contention that cryogenics can be delivered within applicable meter tolerances without the benefit of temperature compensation. DMS maintains that, with the millions of dollars worth of cryogenics metered each year, it is appropriate to ensure the accuracies of the deliveries to the maximum extent possible, which requires the use of temperature-compensated meters.

DMS also suggests that, in lieu of temperature compensation, the industry may consider seeking Code revisions to require that meter calibrations be biased to the extent that extremely warm temperature deliveries are within tolerances. This could allow for a larger tolerance on underregistration than on overregistration. While such an approach would provide consumers with additional protection against short measure, it is not considered to be in the best interest of industry as it would likely result in giving away a significant amount of product.

CGA believes that the survey data indicates that temperature compensation is not needed to provide accurate metering. The temperature range of the test results was within an extremely narrow band that can easily be adjusted by the calibration factor of the meter without costly and troublesome temperature compensation. CGA noted that the average change in volume due to temperature for a given set of tests ranged from a low of 5.8 percent to a high of 6.4 percent. CGA indicates that the meter factor can be adjusted to shift the calibration based on the data observed; the calibration shift would enable the meter to meet accuracy requirements over the observed delivery regime.

(See also Item 334-1 in the 1994 S&T Committee Final Report and Items 334-1 and 334-2 in the 1991 S&T Committee Final Report for additional background information.)

334-2 VC A.1. Application Section of Code

(This item was adopted as part of the consent calendar.)

Source: Western Weights and Measures Association

Recommendation: Modify paragraph A.1. as follows:

A.1. - This code applies to ~~cryogenic liquid measuring~~ devices used for the measurement of cryogenic liquids such as, but not limited to oxygen, nitrogen, hydrogen, and argon, ~~whether such devices are installed in a permanent location, or mounted on a vehicle, or mounted on a portable tank.~~

(Amended 1986)

Note: The Committee does not recommend that carbon dioxide (CO₂) and liquefied natural gas (LNG) be included in the application statement.

The Committee is considering adding carbon dioxide (CO₂) and liquefied natural gas (LNG) to the examples in A.1. and deleting A.2.(c), which excludes devices measuring LNG from the Cryogenic Liquid-Measuring Devices Code. The Committee will add these products to the list specified in the above recommendation if adequate justification is provided by the annual meeting in July.

Discussion: Current meter technology has enabled measurement of cryogenic liquids other than those listed in paragraph A.1. For example, California weights and measures officials are testing meters used for the commercial measurement of cryogenic hydrogen. The current wording of the application section of the Cryogenic Liquid-Measuring Devices Code appears to be restricted to three cryogenic products: oxygen, nitrogen, and argon. It was suggested that the application statement should include all cryogenic liquid applications. As a result of discussions at the Interim Meeting, the Committee modified the original proposal submitted by the Western so that the list of cryogenic products was not all-inclusive, but simply gives examples of cryogenics to which the code applies.

During the Interim Meeting, the Committee discussed the possibility of adding CO₂ to the list of products in paragraph A.1. The Committee noted that the NCWM considered adding a separate CO₂ code to Handbook 44 several years ago; however, study of the issue was not completed. At the time that proposal was made, CO₂ applications were considered different enough from cryogenics covered by the Cryogenic Liquid-Measuring Devices Code to warrant proposal of a separate code. Comments received during the Interim Meeting indicate that modifications to parts of the Cryogenic Code might be needed in order to properly address CO₂ applications. It was also noted that CO₂ is not truly a cryogenic product due to its boiling point.

The Committee also considered deleting paragraph A.2.(c), which excludes application of the code to devices used to dispense LNG. However, the Committee first wanted to determine why LNG was initially excluded from the code. At the Annual Meeting, the Committee concluded that CO₂ and LNG should not be included in the application statement.

Mass Flow Meters Code

337-1 VC UR.3.7. Return of Indicating and Recording Elements to Zero

(This item was adopted as part of the consent calendar.)

Source: NIST Office of Weights and Measures

Recommendation: Add a new paragraph UR.3.7. as follows:

UR.3.7. Return of Indicating and Recording Elements to Zero. - The primary indicating elements (visual), and the primary recording elements when these are returnable to zero, shall be returned to zero immediately before each delivery.

Discussion: The Liquid-Measuring Devices Code, the LPG and NH₃ Code, the Cryogenic Liquid-Measuring Devices Code, and the Milk Meters Code include "return to zero" requirements. For devices that are designed to be returned to zero, the user must return the device to a correct zero indication prior to each delivery. When revisions were made to the Mass Flow Meters Code to include significant requirements from other measuring devices codes, the return to zero requirement was overlooked and was not included in the Mass Flow Meters Code.

Comments at the Interim Meeting indicated general support from industry and weights and measures officials for the proposed change.

337-2 VC S.3.3.1. Vapor Elimination on Loading Rack Meter Systems

(This item was adopted as part of the consent calendar.)

Source: NIST Office of Weights and Measures

Recommendation: Add a new paragraph S.3.3.1. as follows:

S.3.3.1. Vapor Elimination on Loading Rack Liquid Metering Systems. -

- (a) A loading rack liquid metering system shall be equipped with a vapor or air eliminator or other automatic means to prevent the passage of vapor and air through the meter unless the system is designed or operationally controlled by a method, approved by the weights and measures jurisdiction having statutory authority over the device, such that air and/or vapor cannot enter the system.
- (b) Vent lines from the air or vapor eliminator (if present) shall be made of metal tubing or other rigid material.

Recognize guidelines developed in conjunction with Item 330-1 (Guidelines for Applying S.2.1. Vapor Eliminators on Loading Rack Meters) for use in applying paragraph S.3.3.1. of the Mass Flow Meters Code.

Discussion: In July 1994, the NCWM voted to include a new paragraph S.2.1.1. for vapor elimination on loading rack meter systems; that paragraph recognizes the design of the loading rack metering system as a means for preventing vapor from being introduced into the measuring system. The NCWM agreed to recognize this provision because many vapor eliminators installed in loading rack meter systems were not adequate to eliminate vapor from the system or were not functioning at all, and weights and measures officials had limited means for testing the effectiveness of the vapor eliminator. If the system is designed to prevent vapor from being introduced into the system, requiring the installation of a vapor eliminator was viewed as an unnecessary expense.

Mass flow meters are often used in loading rack applications; however, the Mass Flow Meters Code does not recognize system design as an alternative to a vapor eliminator as does the liquid-measuring devices code. Since mass flow meters are subject to many of the same requirements as other types of loading rack meters (e.g., positive displacement and turbine), it seems reasonable to include a paragraph similar to that added to the Liquid-Measuring Devices Code in July 1994.

The proposed language in S.3.3.1. above is slightly different from that in the Liquid-Measuring Devices Code. The proposed S.3.3.1 applies to "liquid" metering systems because, unlike the Liquid-Measuring Devices Code, the Mass Flow Meters Code applies to both liquid and vapor meters.

In Item 330-1, the Committee is recommending guidelines for use in applying paragraph S.2.1. of the Liquid Measuring Devices Code to assist weights and measures officials in assessing individual loading rack meter installations to determine whether or not the system is designed or operationally controlled such that air and/or vapor cannot enter the system. Since this item recommends adoption of a paragraph similar to paragraph S.2.1. of the Liquid-Measuring Devices Code, the Committee believes that the same guidelines should apply.

337-3 V Provision for Sealing; Audit Trail Requirements

(This item was adopted.)

Source: MicroMotion, Inc./Southern Weights and Measures Association

Recommendation: Modify paragraph S.3.5. Provision for Sealing to include specific criteria for audit trails:

S.3.5. Provision for Sealing. - Adequate provision shall be made for an approved means of security (e.g., data change audit trail) or physically applying security seals in such a manner that ~~an adjustment on any device that affects the measurement result cannot be made without breaking the security seal. no adjustment may be made of:~~

- (a) any measurement element;
- (b) any adjustable element for controlling delivery rate when such rate tends to affect the accuracy of deliveries; or
- (c) Provision shall be made for the zero adjustment mechanism to meet this requirement.

When applicable, the adjusting mechanism shall be readily accessible for purposes of affixing a security seal.

Audit trails shall use the format set forth in Table S.3.5..

Add a new Table S.3.5. Categories of Devices and Methods of Sealing.

<i>Table S.3.5. Categories of Device and Methods of Sealing</i>	
<i>Categories of Device</i>	<i>Method of Sealing</i>
<i>Category 1: No remote configuration capability</i>	<i>Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.</i>
<i>Category 2: Remote configuration capability, but access is controlled by physical hardware.</i> <i>Device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode or shall not operate while in this mode.</i>	<i>[The hardware enabling access for remote communication must be on-site. The hardware must be sealed using a physical seal and an event counter for calibration parameters and an event counter for configuration parameters. The event counters may be located either at the individual measuring device or at the system controller; however, an adequate number of counters must be provided to monitor the calibration and configuration parameters of the individual devices at a location. If the counters are located in the system controller rather than at the individual device, means must be provided to generate a hard copy of the information through an on-site device.*]</i> <i>[*Nonretroactive as of January 1, 1996]</i>

<p><i>Category 3: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password)</i></p>	<p><i>An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change , and the new value of the parameter. A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to ten times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)</i></p>
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Nonretroactive and enforceable as of January 1, 1995]

Discussion: The Committee reviewed a proposal submitted to the Southern by MicroMotion, Inc. to add language to the Mass Flow Meters Code to specify audit trail criteria for mass flow meters. Although not supporting MicroMotion's specific proposal, the Southern recognized the need for specific language in the Mass Flow Meters Code to clearly define the minimum criteria for audit trails on mass flow meters.

In reviewing Micromotion's proposal, the Southern S&T Committee emphasized the importance of making criteria consistent for devices that may be used in the same application, but to which different codes apply. For example, the mass flow meter code applies to a mass flow meter, but the LMD Code applies to a positive displacement meter used in the same application. The NCWM S&T Committee agrees with the position that audit trail criteria should be consistent for all devices used in the same application. Consequently, the Committee recommends that the language currently included in the Liquid-Measuring Devices Code for audit trails, along with the changes proposed in Item 330-6, be considered for inclusion in the Mass Flow Meters Code.

(See Item 330-6 for additional background discussion on this item.)

337-4 I UR.3.7. Return of Product to Storage - Compressed Natural Gas Dispensers

(This is a new item added by the S&T Committee during the Interim Meeting. The item was inadvertently omitted from the Committee's Interim agenda.)

Source: 1994 NCWM Laws and Regulations Final Report

Recommendation: Add a new paragraph to the Mass Flow Meters Code as follows:

UR.3.7. Return of Product to Storage, Retail Compressed Natural Gas Dispensers. - Provision shall be made for returning product to storage during testing operations.

Discussion: In 1994, the NCWM adopted requirements to address the sale and delivery of compressed natural gas (CNG). At that time, the Laws and Regulations Committee suggested that a user requirement be added to Handbook 44 for provisions to be made at all retail CNG locations, for returning products to storage used in testing. Weights and measures officials now encounter installations lacking a way to return product to storage once cylinders have been filled during the testing process. In some cases, device owners and servicepersons vent the product to atmosphere to empty the cylinder used in the testing process. Weights and measures officials have expressed concern over the safety and environmental impact of this practice; however, there are no Handbook 44 requirements to require means to return product to storage. The L&R Committee noted that the Environmental Protection Agency has no specific regulation requiring the return of CNG test product to storage, although air quality can be preserved only by eliminating venting to the atmosphere.

Initial discussions with the Natural Gas Vehicle Coalition indicate that similar concerns may be shared by their members and that no significant opposition to such a proposal is anticipated. The lack of means to return product to storage continues to create safety concerns on the part of weights and measures officials.

At the Interim Meeting, the Committee considered adding a sentence to require that qualified personnel be provided by the facility for returning the product to storage. Concern was expressed that the term "qualified" was not well-defined, and weights and measures officials may not be able to assess the experience of the personnel provided by the facility. Consequently, reference to providing a qualified operator was deleted from the recommendation.

At the Annual Meeting, based on comments from industry and weights and measures officials, the Committee concluded that additional study is needed to identify how the product will be returned to storage and what restrictions, such as system pressure, might create problems. To allow time to study this issue, the Committee has changed the item to Informational.

Taximeters Code

354-1A W UR.3.1. Units for Time, Distance Intervals, and Money Values

(This item was withdrawn.)

Source: Carryover Item 354-1

Recommendation: Add a new paragraph UR.3.1. Units for Time, Distance Intervals, and Money Values as follows:

UR.3.1. Units for Time, Distance Intervals, and Money Value. - The display of a taximeter shall be programmed to increment in uniform whole cent money values, at 0.1 kilometer (or 0.1 mile) intervals for distance, and at uniform time intervals. The uniform intervals for distance and time apply to both the initial and subsequent intervals.

Discussion: Items 354-1A and 354-1B were originally presented as a single item, 354-1 UR.3.1. Units for Time, Distance Intervals, and Money Values. Based on the many comments received over the last several years, the Committee recognized that a number of jurisdictions feel strongly that some current representation of pricing information is neither readily understandable nor does it readily facilitate value comparison. The Committee considered two proposals to address these concerns. One proposal, presented when this issue was first placed on the Committee's agenda in 1992, is outlined in Item 354-1A. It specifies permissible units of time, distance, and money values. An alternative proposal, presented by the Western, would require posting of the rate in terms of price per hour and price per mile or kilometer; this proposal is outlined in Item 354-1B.

Due to the strong positions presented, the Committee was concerned that a single voting item might be defeated altogether. Consequently, the Committee separated the item into two parts to enable each proposal to be discussed on its own merits. The Committee believes that both proposals, in Items 354-1A and 354-1B, would facilitate consumer understanding and value comparison of taxicab fares. It should be noted that the proposal presented in 354-1B would facilitate value comparison; however, there may still be customer confusion when observing the meter indications. Consider, for example, a posted rate of \$9.25 per mile; the meter could be programmed for \$.25 per 1/37 mile with \$.25 increments, or programmed for \$.37 per 1/25 mile with \$.37 increments.

The Committee recognizes that, in jurisdictions where multiple rates proliferate, variations in the distance interval can create difficulties in testing devices. This also creates difficulties for consumers in making value comparisons.

Background information from the Committee's 1995 Interim Agenda is included below as reference for both Items 354-1A and 354-1B:

At the July 1994 annual meeting, the Committee considered the addition of a paragraph to specify that taximeter rates be based on and programmed to increment in equal money values and at tenths of kilometers or miles as follows:

UR.3.1. Units for Time, Distance Intervals, and Money Value. The display of a taximeter shall be programmed to increment in uniform whole cent money values, at 0.1 kilometer (or 0.1 mile) intervals for distance, and at uniform time intervals. The uniform intervals for distance and time apply to both the initial and subsequent intervals.

The Committee returned this issue to the regional associations for review and asked that the affected industry study this issue. The Southern continued to support this proposal; the Western presented an alternative proposal as described in Item 354-1B.

The Committee received comments that taxicab drivers are reluctant to handle pennies; therefore, they do not want fares which result in total amounts ending in other than five-cent increments. The recommended requirement specifies distance rates in 0.1 km or 0.1 mile intervals. If taxicab companies want to avoid fares requiring pennies, then the rates must be in integer multiples of \$0.05. Since Handbook 44 currently allows any distance to be used for taxicab rates, to increase rates a jurisdiction or taxicab company could change the distance increment without changing the monetary value of the rate. For example, the rate of \$.25 per 1/15 mile might be changed to \$.25 per 1/17 mile. An opposing argument is that customers typically include differences of pennies in the tip provided to the driver.

Comments at previous meetings (national and regional) have indicated that value comparison by consumers is a concern; this is indicated by complaints received by specific weights and measures jurisdictions. It has also been noted that specifying rate increments for taximeters is consistent with precedents in other codes, such as the Scales Code, where the permissible increments are limited to 1, 2, or 5; the originally proposed paragraph makes no attempt to specify the monetary rate which can be charged. The paragraph does not establish the *value* of the rates that can be set on a meter; it only specifies that a meter must have equal *increment sizes* for the money value, distance interval, and time. The proposed change applies to both the initial and subsequent intervals for distance and time, but the Committee recognizes that the initial money interval may differ from the subsequent money intervals.

Comments received by the Western indicate continued opposition from taxicab drivers to establishing a fixed distance increment. It is believed that the original proposal would create problems for the drivers and traveling public. Meters tallying fares in 0.1-mile increments increment more quickly than the leisurely pace observed with fares based on 1/5 or 1/4-mile; this might cause customers to become suspicious about potential overcharges.

Background Information from the 1994 Final Report of the S&T Committee:

The Taximeter Code requires that rates be stated and conspicuously displayed in the cab, but does not provide for uniformity in units of distance. Modern electronic taximeters are capable of computing at a multitude of rates. Both the amount and distance of registration units can be changed without restriction. This has led to a proliferation of distance rates confusing to customers. Some examples of rates currently in use are listed below:

\$2.00 first 5/37 mile then \$.25 each 5/37 mile
\$2.00 first 1/15 mile then \$.25 each 1/15 mile
\$2.00 first 1/7 mile then \$.25 each 1/7 mile
\$2.00 first 1/9 mile then \$.25 each 1/9 mile

The above rate schedules inhibit value comparison and are not "readily understandable by the ordinary passenger" as required by UR.3. Additionally, it can create difficulty in testing a meter on a measured-mile course because there may not be a change in the fare corresponding to tenths of a mile or to the 1-mile increment marked on most measured-mile courses. (See illustration below, which is based upon the first rate structure listed above. The top numbers represent distance in miles; the dollar amounts represent the fare amount corresponding to the distance.)



The Committee heard conflicting positions. Comments in opposition to the information presented by the Western, indicate that the proposed change to the units for rate increments will not help the consumer to make value comparisons. It was suggested that consumers do *not* make value comparisons among taximeter rates, hence requiring the information to be presented in only these units would not solve the raised concerns. Comments in response to this statement indicated that some weights and measures jurisdictions have received complaints from consumers who *do* make value comparisons and to whom the choice of which taxicab company to use is an economic decision. Comments also indicate that jurisdictions that use a measured-mile course for testing have experienced difficulty in testing meters programmed with unusual rates because the distances at which the fare changes do not correspond to a fixed increment.

It was argued that establishing fixed increments for rate changes was not within the domain of weights and measures jurisdictions, which do not typically establish taxi fares. This argument was raised in 1990 (Item 354-4) when paragraph S.2.1. Initial Time and Distance Intervals was adopted by the NCWM. In response to these comments, it was noted that the proposed requirement does not set the amount of the rate, simply the size of the money value division. It was further noted that precedence exists in other Handbook 44 codes where the maximum/minimum values of the units of measurement and money value have been established. For example, Scales Code Paragraphs S.1.8.1.M. and S.1.8.1., Money-Value Graduations specify the permissible value of the graduated intervals representing money-values on a computing scale.

Comments received since the 1995 Interim Meeting indicate little support for this item from industry or from weights and measures officials. Consequently, the Committee is withdrawing this item.

354-1B W UR.3. Statement of Rates

(This item was withdrawn.)

Source: Carryover Item 354-1

Recommendation: Modify paragraph UR.3. Statement of Rates as follows:

UR.3. Statement of Rates. - The distance and time rates for which a taximeter is set, including the initial distance interval and the initial time interval, and the schedule of extras when an extras indication is provided, shall be conspicuously displayed inside the front and rear passenger compartments. The words "Rate," "Rates," or "Rates of Fare" shall precede the rate statement. The rate statement shall be fully informative, self-explanatory, and readily understandable by the ordinary passenger, and shall either be of a permanent character or be protected by glass or other suitable transparent material. In addition, a rate statement in terms of price per hour and price per kilometer or mile must be clearly and conspicuously posted in a location visible to the passenger prior to entering the vehicle.

Discussion: (See also Discussion in Item 354-1A) Rates posted in terms of price per 5/37 mile or 1/25 mile are not readily understood by the consumer and do not facilitate value comparisons. Comments received from regional weights and measures associations and at past NCWM meetings indicate that consumers in many areas do make value comparisons among taxi fares, particularly customers who depend upon taxis for primary transportation. The Committee recognizes that value comparison must be facilitated for consumers. The Committee agreed that the Western's proposal for posting rates in terms of price per hour and price per kilometer or mile would facilitate this comparison. The Committee also agreed that this information should be available to the consumer prior to entering

the vehicle. Consequently, the Committee recommends that, along with the posting requirements presently specified in paragraph UR.3., language be added to require that a rate statement in terms of price per hour and price per kilometer or price per mile be clearly and conspicuously posted on the outside of the vehicle.

At the Annual Meeting, the Committee concluded that, while it recognizes that this proposal might facilitate value comparison for those customers interested in value comparisons, the problem should be addressed within local jurisdictions. Since there is little support for this item from industry or from weights and measures officials, the Committee is withdrawing this item.

Timing Devices Code

355-1 W S.1.1.1. Operation of In-Service Indicator Light

(This item was withdrawn.)

Source: Northeastern Weights and Measures Association

Discussion: Questions were raised by the manufacturers of timing devices, such as those used for tire inflators, car vacuums, and clothes dryers, over the interpretation of the phrase "in-service light or other equally effective means" in paragraph S.1.1.1. At least one jurisdiction has interpreted this requirement to mean that only an in-service light will satisfy the requirement.

The phrase "other equally effective means" and the word "automatically" were added to paragraph S.1.1.1. in 1979. The intent was to recognize that a device such as a laundry dryer may not be equipped with an in-service light; however, if the device is equipped with a glass door through which the turning of the drum is readily observable, an in-service light is not needed to indicate device operation. The S&T Committee at that time believed that the intent was to indicate clearly that a device is in operation.

The Committee supports the position of weights and measures jurisdictions which have noted that the tactile sensation of the vibration caused by compressed air as it moves through a tire inflator, or the suction of a vacuum, and the noise generated by these devices clearly indicate that the devices are in operation. Similarly, the vibration and heat given off by a clothes dryer is a clear indication that it is in operation, though a dryer without a window on the door might need additional indication that the drum is rotating. Some believe that the present language is clear and that no changes are required; the Committee agrees with this position.

The Committee and these weights and measures officials believe that the language in paragraph S.1.1.1. adequately defines the appropriate means of indicating that the device is in-service. The Committee originally considered adding language to S.1.1.1. to provide examples of how the requirement is intended to be applied; however, the Committee is reluctant to make changes to the paragraph without additional justification. No arguments were provided at the Interim Meeting to convince the Committee that changes are needed. Consequently, the Committee has withdrawn this item from its agenda.

Grain Moisture Meters Code

356-1 VC Elimination of Retroactive Dates

(This item was adopted as part of the consent calendar.)

Source: Central Weights and Measures Association

Recommendation: Delete all retroactive dates presently included in the Grain Moisture Meters Code.

Discussion: Retroactive requirements place an undue hardship on the owners of grain moisture meters. Even if a meter meets the tolerances specified in Handbook 44, the device may not meet the specifications and other user requirements in the retroactive requirements. Consequently, when the retroactive requirements become effective, the device owner is forced to purchase a replacement meter. Elevator operators must spend thousands of dollars to replace existing meters with new, yet unproven, meters. Nonretroactive requirements are viewed as not fair, practical, or cost-effective regulatory practices. Existing equipment that meets the tolerances prescribed by Handbook 44 should not have to be replaced. NTEP historically does not require mechanical, non-automatic, equipment to be removed from use and replaced with new, NTEP-evaluated equipment.

When the retroactive requirements were added to the Grain Moisture Meters Code in 1993, a delay of 5 years was given until the non-retroactive requirements would go into effect for field enforcement; a 10-year delay was given until the requirements became retroactive, anticipating that much of the existing equipment would be made obsolete by the new requirements. The retroactive requirements were proposed by the Grain Moisture Meter Sector in an effort to improve the uniformity of grain moisture measurement; the requirements were intended to result in meters which facilitate and automate operation, requiring less operator intervention and improved readability. At its last meeting, the Grain Moisture Meter Sector reviewed the issue of the retroactive dates. Based on concerns raised by the grain industry and some members of the weights and measures community, the Sector agreed to recommend that the retroactive dates be dropped.

Opposing arguments note that deletion of the retroactive dates will result in perpetuation of the non-automatic meters now in use; the fully automatic devices specified by the retroactive requirements will reduce human operator error that occurs with non-automatic devices when the user does not follow procedures prescribed by the manufacturer. Weights and measures jurisdictions which have already begun to notify users of the impact of the 2003 effective date have also expressed concerns over how the deletion of the retroactive date will affect their credibility in enforcing future requirements.

Concerns were expressed at the Interim Meeting that some devices in the field may meet a majority of the new requirements and the most significant requirements to ensure that the device generates correct grain measurements; however, users will be forced to purchase new equipment to comply with the retroactive requirements. There is also reluctance to force purchasers to buy meters with the risk that a manufacturer may not support calibrations for that meter after some period of time. While the Committee recognizes that owners of other weighing and measuring devices risk the manufacturer going out of business, such lack of support does not create the same impact that lack of calibration data does for grain moisture meters.

356-2 VC S.1.2.2.(g) Digital Indications and Recording Elements

(This item was adopted as part of the consent calendar.)

Source: NTETC Grain Moisture Meter Sector

Recommendation: Add a new paragraph S.1.2.2.(g) Digital Indications and Recording Elements as follows:

S.1.2.2. Digital Indications and Recording Elements

- (g) *On multi-constituent meters (e.g., meters which also measure grain protein), provision shall be made for displaying and recording the constituent label (such as moist, prot, etc.) so as to make it clear which constituent is associated with each of the displayed and recorded values.*

Discussion: The present code assumes that meters measure only moisture, which is to be displayed and recorded in percent moisture wet basis. The anticipated approval of whole grain near-infrared instruments as moisture meters with the capability of measuring other constituents of grain (with results also expressed in percent), has created the potential for confusing moisture results with protein results on a single instrument. To eliminate the possibility of confusion, the Sector recommends the addition of a new sub-paragraph (g) to S.1.2.2.

Few comments were received on this item during the Interim Meeting; the S&T Committee recommends the proposal as presented by the NTETC Grain Moisture Meter Sector with no changes.

356-3 V Audit Trail Requirements for Grain Moisture Meters

(This item was adopted.)

(This is a new item added by the S&T Committee during the Interim Meeting. The item was inadvertently omitted from the Committee's Interim agenda.)

Recommendation: Modify paragraph S.2.3. Provision for Sealing as follows:

S.2.3. Provision for Sealing

- a. *Provision shall be made for applying a security seal in a manner that requires the security seal to be broken, or for using other approved means of providing security (e.g., audit trail available at the time of inspection as defined in part (b)), before any change that affects the metrological integrity of the device can be made to any mechanism.*
- b. *If the operator is able to make changes that affect the metrological integrity of the device (e.g., slope, bias, etc.) in normal operation, the device shall use an audit trail. The minimum form of the audit trail shall be an event logger and shall include:*
 - *An event counter (000 to 999),*
 - *the parameter ID,*
 - *the date and time of the change, and*
 - *the new value of the parameter (for calibration changes consisting of multiple constants, the calibration version number is to be used rather than the calibration constants.)*

The device is not required to display this information, but a printed copy of the information must be available through another on-site device. The event logger shall have a capacity to retain records equal to twenty-five (25) times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.) [Nonretroactive and effective as of January 1, 1998. To become retroactive as of January 1, 2003.]

[Note: Zero-setting and test point adjustments are considered to affect metrological characteristics and must be sealed.]

Discussion: At its March 1994 meeting, the Grain Moisture Meter Sector suggested adding a specification to the Grain Moisture Meters Code to address audit trail requirements. This item was inadvertently omitted from the S&T Committee's 1995 Interim Agenda. The Committee received no negative comments on the proposed change during the discussion of this issue at the Interim Meeting.

Near-Infrared Grain Analyzers Code

357-1 VC UR.2.8. Calibration Adjustments and S.2.5.1.

(This item was adopted as part of the consent calendar.)

Source: NTETC Near-Infrared Protein Analyzer Sector

Recommendation: Modify paragraph UR.2.8. as follows to eliminate references to user slope adjustments and to more explicitly describe the information which the user must keep to justify calibration adjustments.

UR.2.8. Slope and Bias Adjustments. - A written explanation and record of bias and slope changes shall be maintained. The log shall indicate the date and magnitude of changes in bias and slope constants and shall show that these changes were made to bring the instrument into closer agreement with the reference method. Bias changes shall be made only on the basis of tests run on a current set of Standard Reference Samples (SRS) traceable to FGIS Master Instruments.¹ A written explanation and record of all calibration changes, including those changes made by a manufacturer or the manufacturer's designated service agency, shall be maintained. The log shall indicate the date and magnitude of changes in bias and slope constants and the instrument serial number. A Calibration Adjustment Data Sheet for each log entry shall be available for inspection upon request by the field inspector. Data Sheets shall be retained by the user for a period of no less than 18-months following any calibration adjustment. The Data Sheet must show: Date of test and adjustment, serial number of the instrument, calibration identification, the nature of the adjustment, the unique identification number and source of sample sets used, and, for each sample in the set, reference values, initial instrument results (except in the cases of instrument failure and repair), and instrument results after calibration adjustment or instrument repair.

¹ Established error must be known.

Add a note to paragraph S.2.5.1. to correspond to proposed changes to UR.2.8. as follows:

S.2.5.1. Calibration Transfer. *The instrument hardware/software design and calibration procedures shall permit calibration development and the mathematical transfer of calibrations between instruments of like models.*

[Nonretroactive and effective as of January 1, 2000. To become retroactive as of January 1, 2005.]

Note: Only the manufacturer or the manufacturer's designated service agency may make calibration transfer or slope adjustments on near-infrared grain analyzers and, except for instrument failure and repair, only during a prescribed period of time during the year. This does not preclude the possibility of the operator installing the manufacturer-specified calibration constants or standardization parameters under the instructions of the manufacturer or the manufacturer's designated service agency. Nor does it preclude operator bias adjustments when made under the conditions specified in UR.2.8.

Discussion: The need for users of grain analyzers to determine slope adjustments (or to perform spectral matching) has been questioned by the NIR Protein Analyzer Sector. Manufacturers have indicated that the present generation of NIR instruments should not require slope adjustment (or spectral matching) more than once a year. Due to the critical nature of this type of adjustment, the Sector believes that slope adjustments should not be determined by a device user. This does not preclude the possibility of the operator installing manufacturer-specified calibration constants or standardization parameters under the instructions of the manufacturer or the manufacturer's designated agency.

In the Federal Grain Inspection Service (FGIS) official system, instruments that have been standardized by slope and bias adjustment are checked daily with Standard Reference Samples (SRS) to: 1) see if the instrument has drifted, and 2) keep instruments in the official system lined up with the master instruments in FGIS Kansas City. Samples for the standard reference set are selected for good repeatability. They must be clean, with no evidence of infestation and very little dust or dockage. There is one set of SRS for each class of wheat, with five samples in each set. SRS are matched to the Master instruments at FGIS/QARD. The value assigned to each sample in the set represents the average of multiple drops through the Master instruments. One manufacturer reported using 12 standard samples for users to bias adjustments in a national program in Europe. No slope adjustment is made by the user.

The Sector believes that it would be desirable for users to monitor their instruments and keep them aligned with the Official system. The large quantities of required samples makes it uncertain whether or not SRS could be obtained directly from FGIS. However, arrangements might be made for users to obtain SRS from a source with an accuracy traceable to FGIS. The Sector presents the proposed changes to UR.2.8. and S.2.5.1. under the assumption that a suitable source can be developed for SRS.

Few comments were received on this item during the Interim Meeting; the S&T Committee recommends the proposal as presented by the NTETC NIR Protein Analyzer Sector with no changes.

Other Items

360-1 VC Multiple Dimension Measuring Devices Code

(This item was adopted as part of the consent calendar.)

Source: Carryover Item 360-1 (formerly titled Volume Measuring Machines for Shipping Charges)

Recommendation: Include the code proposed in Appendix C (presented by the Multiple Dimension Measuring Devices [MDMD] Work Group) as a tentative code in Handbook 44 with a statement that it is intended for study, rather than enforcement of devices currently in use. Include provisions in the tentative code to specify that the criteria apply immediately for devices submitted for type evaluation.

Discussion: Few comments were received on this Item during the Interim Meeting.

The Work Group asked the Committee to discuss the following two related issues for which the Committee did not develop positions, but requested additional input.

Tare. The Work Group notes that the use of the term "tare" in this code differs from its use in other Handbook 44 codes; therefore, the definition section of the Handbook should distinguish the different meanings of the term. For MDMDs, the term refers to a deduction from the total measurement of the dimensions of an object, such as a shipping pallet or other object used to transport the item(s) to be shipped but which is not part of the customer's shipment; this allows the shipper to deduct the dimensions of that object from the measurement so that the customer is not charged for the additional volume contributed by the object. For a weighing device, the term "tare" refers to the weight of the container or packaging material which is not intended to be part of the net weight determination.

Volume and Rounding - A suggestion was made to delete the term "volume" from paragraph S.1.5. An alternative suggestion is to retain the term "volume" in paragraph S.1.5., but add paragraph, S.1.4.1., to address rounding. This latter comment notes that, except for dimensions in terms of 0.3" or 0.4", dimension increments must be in units of 1, 2, or 5; thus, the product of the three dimensions should yield results in only decimal multiples or submultiples of 1, 2, or 5. The following language is suggested to address rounding:

S.1.4.1. Rounding. - For devices that display or record a volume for an object, the calculation operation shall utilize the internal resolution of the individual dimensions. Rounding shall occur only to the final product of the multiplication.

At the Annual Meeting, the Committee recommended that the NCWM adopt the tentative code presented in Appendix C of the Committee's Interim Report with the following changes identified by the Committee and U.S. manufacturers of this equipment.

Since a reference to an "out-of-zero" or "non-ready" condition is not included in part (b) of paragraph S.1.1. of the tentative code, the Committee agreed that it was inappropriate to reference it in part (a) of the paragraph. Consequently, the Committee decided to delete the reference to an "out-of-zero" or "non-ready" condition. Also based upon comments received from device manufacturers, the Committee decided to modify paragraph S.1.7. Minimum Lengths to specify a minimum of length of 12 d for all increment sizes.

360-2 VC Automatic Weighing Systems Code

(This item was adopted as part of the consent calendar.)

Source: Carryover Item 320-7 (formerly included under Scale Issues)

Recommendation: Appendix D includes a proposed code for Automatic Weighing Systems prepared by the Automatic Weighing Systems Work Group. The Work Group recommends that this code be incorporated as a tentative code into Handbook 44 to address automatic weighing systems.

At the Annual Meeting, the Committee recommended modifying the tentative code presented as Appendix B of the Committee's Interim Report to reflect changes proposed by the Automatic Weighing Systems Work Group at its May 1995 meeting. Changes proposed by the Automatic Weighing Systems Work Group appeared in the Addendum Sheets of the 1995 Annual Meeting and are incorporated into Appendix B of this report.

360-3 W Reorganization of the Liquid-Measuring Devices Code

(This item was withdrawn.)

Source: NIST Office of Weights and Measure

Recommendation/Discussion: The S&T Committee discussed the possibility of reorganizing Handbook 44 so that requirements addressing the same subject are grouped together for ease of reference, regardless of whether the paragraphs are specifications, notes, tolerances, or user requirements. The Committee also considered combining common requirements of the metering codes into a general code for liquid metering devices, then have separate sections for specific devices for which unique requirements apply. The General Code will still apply to these devices. To explore the feasibility of this approach, the Office of Weights and Measures prepared a draft reorganization of the liquid-metering codes for review by the regional associations. The reaction of weights and measures officials and industry has been generally positive, but few comments were received at the Interim Meeting.

At least 2 years will probably be required to complete the draft proposal, and input from the regional weights and measures and industry associations is requested. Copies of the draft prepared by OWM are available on request. Since limited resources are available to pursue this project, the Committee seeks input on the priority to be assigned to this task and is looking for volunteers to assist.

The Committee has received few comments and no offers of assistance. There is no indication that this issue is of high enough priority to maintain on its agenda at this time; consequently, the Committee is withdrawing it.

360-4 V Changes to Fundamental Considerations

(This item was adopted.)

Source: NCWM Committee on Education, Administration, and Consumer Affairs

Recommendation: Rewrite, or amend, sections 5.2., 6.1., and 7.1. of the Fundamental Considerations, Appendix A, in Handbook 44 as follows to more accurately reflect actual enforcement actions in most jurisdictions, provide flexibility in establishing jurisdictional enforcement policies, and bring material into agreement with L&R proposals presented in the 1994 NCWM Final Report.

5. Correction of Commercial Equipment

5.2. When Corrections Should be Made. - The One of the primary duties of a weights and measures official has one official duty, is to determine that whether equipment is or is not suitable for commercial use. If a device conforms to all legal requirements, the official "marks" or "seals" it to indicate approval. If it does not conform to all official requirements, the official he is required to reject it and prohibit its use until take action to ensure that the device is brought into proper conformance. corrected within a reasonable period of time. Devices with performance errors that could result in serious economic injury to either party in a transaction should be prohibited from use immediately and not allowed to be returned to service until necessary corrections have been made. The official should consider the most appropriate action, based on all available information and economic factors.

Some officials contend that it is justifiable for the official to make minor corrections and adjustments if there is no service agency nearby or if the owner or operator depends on this single device and would be "out of business" during the repair of if the use of the device were prohibited until repairs could be made.

Before adjustments are made at the request of the owner or his or her representative, the official should be confident that the problem is not due to faulty installation or a defective part, and that the adjustment will correct the problem. He The official should never undertake major repairs, or even minor corrections, if services of commercial agencies are readily available. The official should always be mindful of conflicts of interest before attempting to perform any services other than normal device examination and testing duties.

6. Rejection of Commercial Equipment

6.1. Rejection and Condemnation. - The uniform Weights and Measures Law contains a provision stating that the director shall reject and ~~mark rejected~~ order to be corrected such physical weights and measures or devices as he finds found to be incorrect. Weights and measures and devices that have been rejected may be seized if not corrected within a reasonable time or if used or disposed of in a manner not specifically authorized. The director shall ~~condemn~~ remove from service and may seize weights and measures found to be incorrect that are not capable of being made correct.

(No change to the remaining portion of Section 6.1)

7. Tagging of Equipment

7.1. Rejected and Condemned. - It will ordinarily be practicable to tag or mark as rejected each item of equipment found to be incorrect and considered susceptible of proper reconditioning. ~~, and this should always be done unless the repairs are to begin immediately.~~ However, it can be considered justifiable not to mark as rejected incorrect devices capable of meeting acceptable performance requirements that have been allowed to remain in service for a reasonable time until minor problems are corrected since marks of rejection may tend to be misleading about a device's ability to produce accurate measurements during the correction period. ~~t~~The tagging of equipment as condemned or with a similar label to indicate that it is permanently out of service is not recommended if there is any other way in which the equipment can definitely be put out of service. Equipment that cannot successfully be repaired should be dismantled, removed from the premises, or confiscated by the official rather than merely being tagged as "condemned."

Discussion: The Committee received mixed comments on this topic at the Interim Meeting. Some comments indicated a preference for the current language. Others supported additional language to clarify the intent of this section of the Fundamental Considerations. All comments indicated that application of the criteria in the Fundamental Considerations requires that weights and measures officials use judgement in assessing the individual circumstances involved of each situation.

The Committee agreed that the current wording in this section might be misinterpreted. While weights and measures jurisdictions generally understand the intent of the application, incorrect interpretations have sometimes been made by agencies that are not familiar with weights and measures activities. Consequently, the Committee supports the modifications proposed in the Recommendations above.

The following discussion is excerpted from the 1994 final report of the NCWM Education Committee and is included as background information: Some of the changes are to reflect proposed changes to the Uniform Weights and Measures Law, which uses the terms "reject," "condemn," and "mark as rejected" without defining them. These are sections of the Fundamental Considerations where these terms are described or defined. Most jurisdictions use these terms, but there is little uniformity as to their meaning or the governing policies. Also, there is little interest in developing standard, uniform definitions.

Flexibility in the definitions and enforcement policies is needed because of the great number of Handbook requirements that have little or no effect on the actual ability to measure accurately (i.e., marking requirements). Weights and Measures programs and most other government programs are under closer scrutiny than ever before by the political bodies that authorize them. Rigid policies that immediately remove devices from service and possibly put customers out of business for failure to meet minor requirements are often considered unreasonable by lawmakers. Assuring equity in the marketplace can be accomplished while still allowing reasonable flexibility in enforcement actions.

360-5 I OIML Report

The following information was provided by Mr. O. K. Warnlof, Standards Management Program, NIST on OIML activities of significant importance to the NCWM.

CIML Meeting: At the CIML Meeting in October, 1994 Gerhardt Faber, Director Nederlands Meetinstituut N.V., was elected President of the CIML. He is the 5th President to serve since the origin of the organization in 1956. He succeeds Knut Birkeland who had served the past 14 years. Mr. Birkeland also retired from his position as Director General of the National Measurement Service of Norway.

Committee Activities and Document Status: The following is the present status of the work of Technical Committees and Subcommittees that are of interest to this Committee.

TC 8 Measurement of quantities of fluids (responsibility - Switzerland)

- * R 105 "Direct mass flow measuring systems for quantities of liquids (1993)
Draft Annex "Test report format for the evaluation of direct mass flow measuring systems for quantities of liquids (1995).
- * R 81 "Measuring devices and measuring systems for cryogenic liquids" (1st CD Revision 1994). 1st CD Revision circulated to IWG in 1994. Comments received by 12/94 and circulated to NWG for discussion at meeting held February 26, 1995, at the CGA annual meeting in San Antonio, Texas. A 2nd CD was developed and circulated March 31, 1995 to the IWG for comment. There will be a meeting of the NWG at CGA, Tuesday August 29, 1995 to respond to the comments of the IWG in preparation for a meeting of the IWG to be held at NIST, October 10 - 12, 1995.
- * Draft R 117 "Measuring systems for liquids other than water Part 1: Definitions, metrological and technical requirements" Part 2: Metrological control and annexes (March 1994). Adopted by CIML at 10/94 meeting.
 - Characteristics of standard capacity measures and test methods for measuring systems. Adopted by CIML at its meeting 10/94.
 - Testing Procedures for pattern examination of fuel dispensers for motor vehicles. Adopted by CIML at its meeting 10/94.
 - Pipe provers for testing measuring systems for liquids. Adopted by CIML at its meeting 10/94.
- * 5th CD R "Mass measuring systems for liquids in tanks" circulated to NWG May 22, 1995 for response by July 14, 1995. Comments returned to SC July 14, 1995.

TC 9 Instruments for measuring mass and density (responsibility - U.S.)

- * R 76 "Nonautomatic weighing instruments Part 1 Metrological and technical requirements - Tests" (1992). Amendments 1994 - Adopted by CIML at its meeting 10/94.. "Part 2 - Pattern evaluation report" (1993). (EC Directive 90/384 EEC) - (EN 45501). The printed Revisions were circulated to the NWG May 17, 1995.
- * R 60 "Metrological regulation for load cells" (1991).
Annex A - Test report format for the evaluation of load cells (1993).
A recommended Revision was circulated to the NWG January 30, 1995. The responses received were affirmative so the recommended Revision was circulated to the IWG March 16, 1995 for response by August 25, 1995.
- * R 106 "Automatic Rail Weighbridges" (1993).
Annex - Test procedures and Test report format circulated to NWG April 17, 1995 for response by June 2, 1995. On the basis of the response, the United States submitted a "no" vote on the test procedures June 5, 1995.
- * R 107 "Discontinuous totalizing automatic weighing instruments (Automatic hopper weighers) (1993).
Annex A - Pattern Evaluation Report (1995). Adopted by CIML at its meeting 10/94.
- * R 50 "Continuous totalizing automatic weighing instruments (Belt-weighers) (1994)
 - Test Procedures & Report Forms soon to be published.
- * R 51 "Checkweighing and weight grading machines" (Catchweighers) (Draft Revision - 1995).
Draft Revision, Test Procedures, and Report Format circulated for vote to NWG February 16, 1995 for response by May 26, 1995. The United States "yes" vote was submitted to the SC on June 5, 1995.
To be submitted to CIML for sanction at it's meeting in October, 1995.
- * R 61 "Automatic gravimetric filling machines" (Draft Revision 1995).
Draft Revision, Test Procedures, and Report Format circulated for vote to NWG February 16, 1995 for response by May 26, 1995. The United States "yes" vote was submitted to the SC on June 5, 1995.

To be submitted to CIML for sanction at it's meeting in October, 1995.

- * R 74 "Electronic weighing instruments" (1993).
- * 2nd CD "Automatic road weighbridges." A meeting of the IWG is scheduled for September 18 - 20, 1995, in Paris on this document.
- * R 111 "Weights of classes E₁, E₂, F₁, F₂, M₁, M₂, M₃" (1994). Test procedures and Report format will be submitted by the Nordic Task Group at the OIML Seminar in September, 1995

Seminar: BIML has announced a Seminar "Weighing Towards the Year 2000" to be held September 13 - 15, 1995, in Paris, France. The purpose of this Seminar is to discuss new technology and other evolutions that impact the implementation or revision of OIML International Recommendations. Similar Seminars held in the past have greatly aided all participants in a better understanding of the work, thus more readily achieving a consensus in the development, revision, or implementation of OIML International Recommendations.

A request for papers has been made on the following subjects:

- * Implementation or Revision of OIML Recommendations of TC9 "Instruments for measuring mass and density."
- * Automatic road weighbridges
- * Electromagnetic susceptibility tests
- * Interfaces and electronic devices not covered by OIML Recommendations
- * Quality assurance systems applied by manufacturers and their implication on type approval and initial verification
- * Modular approach for conformity assessment and certification of weighing instruments

General Information

Language: English

Papers: Experts, users, and manufacturers are invited to present **original** papers on any of these topics.

Fees: 2500 FRF (approx \$480) includes all seminar materials, lunches, and coffee breaks. Program participants will not be subject to this fee but are requested to contribute toward the costs of the luncheon and coffee breaks.

Dateline: December 16, 1994 to volunteer for paper. Abstract by March 1, 1995. Final paper by June 1, 1995.

Western European Legal Metrology Cooperation (WELMEC): Those who are interested in the international marketplace should be aware of the activities of the WELMEC. The 5 publications of WELMEC that are available from our Office are:

- * An Introduction to WELMEC
- * Common Application of Directive 90/384/EEC and EN45501
- * Guide for notified bodies performing conformity assessments of measuring instruments
- * The WELMEC Type Approval Agreement
- * Directive 90/384/EEC: Explanation and Interpretation
- * Guide for Examining Software (NAWI)

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Robert B. Kelley, New York City, NY

Ronald D. Murdock, North Carolina

Gary D. West, New Mexico

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Committee on Specifications and Tolerances

Appendix A (Item 320-5)
Performance and Permanence Tests for Type Evaluation
of Electronic Vehicle On-Board Weighing Systems

Note: These tests apply to systems such as lift truck scales, scales mounted on refuse vehicles, etc. It has generally been agreed that scales with a capacity of 30 000 lb and less will be considered Class III as they would be used in a weighing operation where a Class III scale would normally be used. Likewise, scales with a capacity of more than 30,000 lb will be considered Class III L when they are used in a weighing operation where a Class III L scale would normally be used.

1.0 Laboratory Testing

Scales up to and including 2000-lb capacity will be tested in the laboratory. All applicable tests, including influence factor tests, will be performed. It may be necessary for the manufacturer to supply special testing apparatus (mounting frames, test baskets, etc.) for laboratory testing purposes. Likewise, a normal size commercial wood skid can be used as the load receiving element for a lift truck scale under evaluation. As much testing as possible may be performed in the laboratory to save evaluation time, travel, and expense. In most cases, the indicating element and load cell(s) must be laboratory tested and traceable to an NTEP CC.

1.1 Test Considerations

It may be possible and advantageous to test on-board weighing systems larger than 2000 lb (e.g., a 5000-lb lift truck scale) at a laboratory site. Influence factor testing of the larger capacity weighing element is not applicable but other tests (static, dynamic, as-used, out-of-level, etc.) may be performed as circumstances allow.

As-used testing is very important for vehicle on-board weighing systems since, in most cases, normal laboratory tests cannot simulate actual use conditions. As-used conditions must be considered and tested when evaluating a system. Depending on the type of device, consider the following:

- Performance when the vehicle is running.
- Performance when the vehicle is moving.
- Test apparatus performance versus normal load receiver performance (e.g., test pan vs. refuse container). For ease and safety reasons test apparatus may be used but like performance must be verified.
- It may not be possible or advisable to use known test weights; therefore, pre-weighed loads of varying weights need to be used (e.g., a dynamic refuse dumping system).
- Load shift on dump systems, such as refuse dumpers (pre-weighed sandbags may be used).
- It may not be possible to utilize known test weights to capacity or at all on some larger on-board systems (e.g., a 50 000-lb tank wagon). In these cases a platform scale, vehicle scale, or mass flow meter may need to be used.
- Locate a safe location for out-of-level testing (e.g., a remote ramp or parking lot).

1.2 Increasing-Load Test

A minimum of four increasing-load tests should be conducted. Use at least five test loads for the increasing-load test. When practical, choose the weights so they are close to the upper range of each tolerance level.

1.3 Decreasing-Load Test

A minimum of four decreasing-load tests should be conducted. Use at least five test loads for the decreasing-load test. When practical, choose the weights so they are close to the upper range of each tolerance level.

Remember that the decreasing-load tests may be especially important for an on-board weighing system as they may be used to backweigh.

1.4 Shift Test

- 1.4.1. At least two shift tests with one-half capacity test load centered in the center of each quadrant should be conducted.
- 1.4.2. At least two shift tests with one-quarter capacity test load placed on the corners should be conducted.

Note: *The shift test for a vehicle on-board weighing system shall be conducted in a manner consistent with its normal use (see paragraph N.1.3.7.). Normal shift tests, as described above, may not be practical for some on-board weighing systems (e.g., when the load receiving element is a home refuse container). These systems may be susceptible to off-center loading or load shifting, hence it may be more practical to test for these characteristics during the as-used part of the evaluation.*

1.5 Out-of-Level Tests

A vehicle on-board weighing system shall operate within tolerance when the weighing system is out-of-level up to 3 degrees (or 5%). However, beyond the 3 degrees (or 5%), if the accuracy is affected by out-of-level conditions normal to the use of the device, the system shall be equipped with an out-of-level sensor that inhibits the weighing operation when the system is out-of-level to the extent that the accuracy limits are exceeded.

- 1.5.1. Place one side of the vehicle 3 degrees (or 5%) out-of-level. Conduct an increasing-load test, decreasing-load test, and shift tests. Additional tests need to be conducted to the maximum extent that the system continues to operate while out-of-level in this direction.
- 1.5.2. Place the opposite side of the vehicle out-of-level by 3 degrees (or 5%) and increase the condition to the maximum extent that the system continues to operate. Repeat tests.
- 1.5.3. Place the front of the vehicle out-of-level by 3 degrees (or 5%) and increase the condition to the maximum extent that the system continues to operate. Repeat tests.
- 1.5.4. Place the back of the vehicle out-of-level by 3 degrees (or 5%) and increase the condition to the maximum extent that the system continues to operate. Repeat tests.

(Note: Depending upon the specific device design, an additional out-of-level test might be considered in which one wheel or set of wheels (a corner of the vehicle) is placed at a different level than the remaining wheels and the tests described in 1.5.1. are repeated.)

2.0 Initial Field Permanence Test

2.1 Test Considerations

As-used testing is very important for vehicle on-board weighing systems to properly simulate actual use conditions. As-used conditions must be considered and tested when evaluating a system. Depending on the type of device, consider the following:

- Performance when the vehicle engine is running.

- Performance when the vehicle is moving.
- Test apparatus performance versus normal load receiver performance (e.g., test pan vs. refuse container). For ease and safety reasons test apparatus may be used but like performance must be verified.
- Load shift on dump systems such as refuse dumpers (pre-weighed sandbags may be used).
- It may not be possible to utilize known test weights to capacity or at all on some larger on-board systems (e.g., a 50 000-lb tank wagon). In these cases a platform scale, vehicle scale, or mass flow meter may need to be used.
- Locate a safe location for out-of-level testing (e.g., a remote ramp or parking lot).

2.2. Width of Zero, Center of Zero, and Discrimination Tests

Review performance of the width of zero, center of zero, discrimination near zero, and discrimination near capacity.

2.3. Increasing-Load Test

A minimum of four increasing-load tests should be conducted. Use at least five test loads for the increasing-load test. Known test weights should be used. When practical, choose the weights so they are close to the upper range of each tolerance level.

2.4. Decreasing-Load Test

A minimum of four decreasing-load tests should be conducted. Use at least five test loads for the decreasing-load test. When practical, choose the weights so they are close to the upper range of each tolerance level.

Remember that decreasing-load tests may be especially important for on-board weighing systems as they may be used to backweigh.

2.5. Shift (Off-Center Load) Tests

2.5.1. At least two shift tests with one-half capacity test load centered in the center of each quadrant should be conducted.

2.5.2. At least two shift tests with one-quarter capacity test load placed on the corners should be conducted.

Note: *The shift test for a vehicle on-board weighing system shall be conducted in a manner consistent with its normal use (see paragraph N.1.3.7.). Normal shift tests, as described above may not be practical for some on-board weighing systems (e.g., when the load receiving element is a home refuse container). These systems may be susceptible to off-center loading or load shifting, hence it may be more practical to test for these characteristics during the as-used part of the evaluation.*

2.6. Out-of-Level Tests

A vehicle on-board weighing system shall operate within tolerance when the weighing system is out-of-level up to 3 degrees (or 5%) (S.2.4.1.). The system is not prohibited from operating when out-of-level beyond 3 degrees (or 5%). However, beyond the 3 degrees (or 5%), if the accuracy of the system is affected by out-of-level conditions normal to the use of the device, the system shall be equipped with an out-of-level sensor that inhibits the weighing operation when the system is out-of-level to the maximum extent that the accuracy limits are exceeded.

- 2.6.1. Place one side of the vehicle 3 degrees (or 5%) out-of-level. Conduct an increasing-load test, decreasing-load test, and shift tests. Additional tests need to be conducted to the maximum extent that the system continues to operate while out-of-level in this direction.
- 2.6.2. Place the opposite side of the vehicle out-of-level 3 degrees (or 5%) and increase the condition to the maximum extent that the system continues to operate. Repeat tests.
- 2.6.3. Place the front of the vehicle out-of-level 3 degrees (or 5%) and increase the condition to the maximum extent that the system continues to operate. Repeat tests.
- 2.6.4. Place the back of the vehicle out-of-level 3 degrees (or 5%) and increase the condition to the maximum extent that the system continues to operate. Repeat tests.

(Note: *Depending upon the specific device design, an additional out-of-level test might be considered in which one wheel or set of wheels (a corner of the vehicle) is placed at a different level than the remaining wheels and the tests described in 2.6.1. are repeated.*)

3.0 Permanence Test Requirements

3.1. Minimum Weighments

- 3.1.1. A minimum of 300 weighing operations are required during the test period. The manufacturer is to log the date, time, and weight. The log is to be initialed by the person conducting the weighing.

Only the loads which have been applied using a method representative of the scale's intended use can be counted. The scale may be used to weigh other loads, but only loads falling within the criteria specified in Section 3.1. are counted as part of the permanence test.
- 3.1.2. Fifty percent of the loads must be above 50 percent of the scale capacity; and
- 3.1.3. One hundred percent of the loads must be above 20 percent of the scale capacity.
- 3.1.4. A device is required to be in use for a minimum of 20 days. It is not specified that a certain number of weighing operations be conducted each day, but use of the scale should be representative of normal in-service use.

4.0 Subsequent Field Permanence Test

At least three sets of increasing-/decreasing-load tests and shift tests as described in sections 2.3., 2.4., and 2.5. should be repeated. Out-of-level testing in all four directions as described in section 2.6. should be repeated.

Appendix B (Item 330-5)
Excerpt from National Conference on Weights and Measures Publication 14
Family of Liquids Table Developed by NTETC Measuring Sector

Product Family	Product Subgroup	Typical Products	Viscosity (SSU ¹)	Specific Gravity ²	% Abrasive Solids
Petroleum Products	Refined Petroleum Products	Diesel Fuel, Distillate, Gasoline, Fuel Oil, Kerosene, Light Oil, Spindle Oil, etc.	20 to 500 SSU	0.68 to 1.1	None
	Aviation Fuels	AVgas, Jet A, Jet A-1, Jet B, JP4, JP5, JP7, JP8, etc.	20 to 40 SSU	0.68 to 0.85	None
	Lubricating Oils	SAE Grades	500 to 5000 SSU	0.75 to 1.0	None
	Heated Products	Bunker Oil, 6 Oil, Crude Oil, Asphalt	150 to 10,000 SSU	0.8 to 1.1	Nil
Solvents	Solvents General	Acetates, Acetone, Esters, Ethylacetate, Hexane, MEK, Naphtha, Toluene, Xylene, etc.	2 to 35 SSU 0.3 to 7 centipoise	0.6 to 1.6	None
	Solvents Chlorinated	Carbon Tetra-Chloride, Methylene-Chloride, Perchloro-Ethylene, Trichloro-Ethylene, Etc.	2 to 35 SSU 0.3 to 7 centipoise	0.6 to 1.6	None
Alcohols & Glycols	Alcohols, Glycols, & Water Mixes Thereof	Ethanol, Methanol, Butanol, Isopropyl, Isobutyl, Ethylene glycol, Propylene glycol, etc.	2 to 35 SSU 0.3 to 7 centipoise	0.6 to 1.6	None
Compressed Gases, Liquefied	LPG	Propane, Butane, Freon 11, Freon 12, Freon 22, etc.	0.5 to 3 SSU 0.1 to 0.5 centipoise	0.5 to 0.65	None
	NH ₃	Anhydrous Ammonia	0.5 SSU 0.1 centipoise	0.56 to 0.68	None

¹ SSU - Saybolt seconds universal. Some viscosity values are reported in SSU units; to convert these values to an approximate SI value $\frac{SSU}{5}$ = centistokes; centistokes x specific gravity = centipoise (SI Unit)

Centipoise - One hundredth (10^{-2}) of a centimeter-gram-second unit of dynamic viscosity equal to one dyne-second per square centimeter

² The specific gravity of each product family is determined as the ratio of the product mass (@ 15.6 °C (60 °F) petroleum products and 20 °C (68 °F) all other products) to the mass of an equal volume of distilled water at 4 °C (39 °F).

Product Family	Product Subgroup	Typical Products	Viscosity (SSU ¹)	Specific Gravity ²	% Abrasive Solids
Water	Water	Tap Water, Deionized, Demineralized, Potable	0.5 SSU 1.0 centipoise	1.0	None
Agricultural Liquids - Fertilizers	Fertilizers, Clear Liquid N-P-K	10-34-0; 4-10-10; 9-18-9; etc.	50 to 100 10 to 30 centipoise	1.0 to 1.3	None
	Fertilizers, Nitrogen Solutions	20% Aqua-Ammonia; 28%, 30% or 32% Nitrogen Solution; Urea; Ammonia Nitrate; etc.	30 to 100 SSU 10 to 30 centipoise	1.0 to 1.35	None
	Fertilizer, Suspensions	3-10-30; 4-4-27; etc.	100 to 1000 SSU 20 to 200 centipoise	1.0 to 1.65	4%
Agricultural Liquids - Herbicides	Herbicides, Thin Liquids	Eradicane, Lorox, Princep, Round-up, Sencor, Sutan, Sutazine, Teflon, etc.	100 to 250 SSU	0.9 to 1.2	Nil
	Herbicides, Viscous Liquids	Dual, etc.	200 to 500 SSU	0.9 to 1.2	Nil
	Herbicides, Flowables	Atrex, Atraxine, Bicep, Bladex, etc.	500 to 3500 SSU	0.9 to 1.2	3%
Agricultural Liquids - Liquid Feeds	Liquid Feeds	Liquid Molasses; Molasses plus Phos Acid and/or Urea; etc.	50 to 250,000 SSU 10 to 50,000 centipoise	1.2 to 1.5	4%
Chemicals	Chemicals	Sulfuric Acid, Hydrochloric Acid, Phosphoric Acid, etc.	75 SSU	1.0 to 1.65	None

¹ SSU - Saybolt seconds universal. Some viscosity values are reported in SSU units; to convert these values to an approximate SI value $\frac{SSU}{5}$ = centistokes; centistokes x specific gravity = centipoise (SI Unit)

Centipoise - One hundredth (10^2) of a centimeter-gram-second unit of dynamic viscosity equal to one dyne-second per square centimeter

² The specific gravity of each product family is determined as the ratio of the product mass (@ 15.6 °C (60 °F) petroleum products and 20 °C (68 °F) all other products) to the mass of an equal volume of distilled water at 4 °C (39 °F).

Appendix C (Item 360-1)

Proposed Code for Multiple Dimension Measuring Devices

This tentative code has only a trial or experimental status and is not intended to be enforced. The requirements are designed for study prior to the development and adoption of a final Code for Multiple Dimension Measuring Devices. If upgraded to become a permanent code, all requirements, except those for tolerances, will be non-retroactive as of the effective date of the permanent code; tolerance requirements will apply retroactively as of the effective date of the permanent code.

A. Application

A.1. General. - This code applies to dimension and volume measuring devices used for determining the dimensions and/or volume of objects for the purpose of calculating freight, storage, or postal charges based on the dimensions and/or volume occupied by the object.

A.2. Insofar as they are clearly applicable, the provisions of this code apply also to devices designed to make multiple measurements automatically to determine a volume for other applications as defined by General Code paragraph G-A.1.

A.3. In addition to the requirements of this code, multiple dimension measuring devices shall meet the requirements of Section 1.10. General Code.

A.4. This Code does not apply to:

- (a) devices designed to indicate automatically (with or without value-computing capabilities) the length of fabric passed through the measuring elements (see Sec. 5.50. for Fabric-Measuring Devices),
- (b) devices designed to automatically indicate the length of cordage, rope, wire, cable, or similar flexible material passed through the measuring elements (see Sec. 5.51. for Wire- and Cordage-Measuring Devices), or
- (c) any linear measure or measure of length or devices used to measure individual dimensions for the purpose of assessing a charge per unit of measurement of the individual dimension (see Sec. 5.52. for Linear Measures).

A.5. Type Evaluation. - The National Type Evaluation Program will accept for type evaluation only those devices that comply with all requirements of this code.

S. Specifications

S.1. Design of Indicating and Recording Elements and of Recorded Representations.

S.1.1. Zero or Ready Indication.

- (a) Provision shall be made to indicate or record either a zero or ready condition.
- (b) A zero or ready condition may be indicated by other than a continuous digital zero indication, provided that an effective automatic means is provided to inhibit a measuring operation when the device is in an out-of-zero or non-ready condition.

S.1.2. Digital Indications. - Indicated and recorded values shall be presented digitally.

S.1.3. Negative Values. - Except when in the tare mode, negative values shall not be indicated or recorded.

S.1.4. Dimensions Indication. - If in normal operation the device indicates or records only volume, a testing mode shall be provided to indicate dimensions for all objects measured.

S.1.5. Value of Dimension/Volume Division Units. - The value of a device division "d" expressed in a unit of dimension shall be presented in a decimal format with the value of the division expressed as:

- (a) 1, 2, or 5; or
- (b) a decimal multiple or submultiple of 1, 2, or 5; or
- (c) a binary submultiple of a specific inch-pound unit of measure.

Examples: device divisions may be 0.01, 0.02, 0.05; 0.1, 0.2, or 0.5; 1, 2, or 5; 10, 20, 50, or 100; 0.5, 0.25, 0.125, 0.0625, etc.

S.1.5.1. For Indirect Sales. - In addition to the values specified in S.1.5., the value of the division may be 0.3 inch and 0.4 inch.

S.1.6. Customer Indications and Recorded Representations. - Multiple dimension measuring systems must provide information as specified in Table S.1.6.

S.1.7. Minimum Lengths. - The minimum length to be measured by a device is 12 d. The manufacturer may specify a longer minimum length.

S.1.8. Indications Below Minimum and Above Maximum. - Except for entries of tare, when objects are smaller than the minimum dimensions identified in paragraph S.1.7. or larger than 105 percent of the maximum dimensions and/or volume marked on the device, the indicating or recording element shall either:

- (a) not display or record any usable values, or
- (b) identify the displayed or recorded representation with an error indication.

S.1.9. Operating Temperature. - An indicating or recording element shall not display nor record any usable values until the operating temperature necessary for accurate measuring and a stable zero reference or ready condition have been attained.

S.1.10. Adjustable Components. - Adjustable components shall be held securely in adjustment and, except for a zeroing mechanism (when applicable), shall be located within the housing of the element.

S.1.11. Provision for Sealing.

- (a) A device shall be designed with provision(s) for applying a security seal that must be broken, or for using other approved means of providing security (e.g., data change audit trail available at the time of inspection), before any change that detrimentally affects the metrological integrity of the device can be made to any measuring element.
- (b) Audit trails shall use the format set forth in Table S.1.11.

S.2. Design of Zero and Tare.

S.2.1. Zero or Ready Adjustment. - A device shall be equipped with means by which the zero reference or ready condition can be adjusted, or the zero reference or ready condition shall be automatically maintained. The zero reference or ready control circuits shall be interlocked so that their use is prohibited during measurement operations.

S.2.2. Tare. - The tare function shall operate only in a backward direction (that is, in a direction of underregistration) with respect to the zero reference or ready condition of the device. The value of the tare division or increment shall be equal to the division of

its respective axis on the device. There shall be a clear indication that tare has been taken.

S.3. Systems with Two or More Measuring Elements.

- A multiple dimension measuring system with a single indicating or recording element, or a combination indicating-recording element, that is coupled to two or more measuring elements with independent measuring systems, shall be provided with means to prohibit the activation of any measuring element (or elements) not in use, and shall be provided with automatic means to indicate clearly and definitely which measuring element is in use.

S.4. Marking Requirements. [See also G-S.1., G-S.4., G-S.5.2.5., G-S.6., G-S.7., G-UR.2.1.1., and G-UR.3.1.]

S.4.1. Multiple Dimension Measuring Devices, Main Elements, and Components of Measuring Devices. - Multiple dimension measuring devices, main elements of multiple dimension measuring devices when not contained in a single enclosure for the entire dimension/volume measuring device, and other components shall be marked as specified in Table S.4.1.a. and explained in the accompanying notes, Table S.4.1.b.

S.4.2. Location Of Marking Information. - The required marking information shall be so located that it is readily observable without the necessity of the disassembly of a part requiring the use of any means separate from the device.

N. Notes

N.1. Test Procedures.

N.1.1. General. - The device shall be tested using test standards and objects of known and stable dimensions.

N.1.2. Position Test. - Measurements are made using different positions of the test object and consistent with the manufacturer's specified use for the device.

N.1.3. Disturbance Tests, Field Evaluation. - A disturbance test shall be conducted at a given installation when the presence of disturbances specified in T.7. has been verified and characterized if those conditions are considered "usual and customary."

N.1.4. Test Object Size. - Test objects may vary in size from the smallest dimension to the largest dimension marked on the device, and for field

Table S.1.6 Information to be Provided

Situation =>	Scenario 1.1	Scenario 1.2	Scenario 1.3	Scenarios 2, 3, 4
Information ↓	Customer present (printer only)	Customer present (display only)	Customer present (printer and display)	Customer is not present.
System ID	P (only in multi-system applications)	D (only in multi-system applications)	D or P (only in multi-system applications)	P or A
Object ID	N/A	N/A	N/A	P or A
Dimensions and/or volume, units	P	D	D and P	P or A
Error indicator	P	D	D and P	N/A
Billing method	P	D	D or P	N/A
Billed weight	P	D	D or P	N/A
Total price	P	D	D or P	N/A
Dim weight (if applicable)	P	D	D or P	P or A
Scale weight (if applicable)	P	D	D or P	P or A
Tare (if applicable)	P	D	D or P	P or A
Oversized indicator	P	D	D or P	P or A
Dimensions are of smallest box	P or M	D or M	D or P or M	P or A
Billing rate or rate chart, conversion factors	A	A	A	P or A
D = DISPLAYED	A = AVAILABLE UPON REQUEST (retained for at least 30 days after invoice)			NA: NOT APPLICABLE
P = PRINTED	M = MARKED ON THE DEVICE			

verification examinations, shall be an integer multiple of "d."

N.1.5. Digital Zero Stability. - A zero indication change test shall be conducted on all devices which show a digital zero. After the removal of any test object, the zero indication shall not change. (Also see G-UR.4.2.)

T. Tolerances

T.1. Design. - The tolerance for a multiple dimension measuring device is a performance requirement independent of the design principle used.

T.2. Tolerance Application.

T.2.1. Type Evaluation. - For type evaluations, the tolerance values apply to tests within the influence

Table S.1.11. Categories of Devices and Methods of Sealing

Categories of Devices	Method of Sealing
Category 1: No remote configuration.	Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.
<p>Category 2: Remote configuration capability, but access is controlled by physical hardware.</p> <p>Device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode.</p>	The hardware enabling access for remote communication must be at the device and sealed using a physical seal or two event counters: one for calibration parameters and one for configuration parameters.
<p>Category 3: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password).</p>	An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter. A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to ten times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)

factor limits of temperature and power supply voltage specified in T.5.1. and T.5.2.

T.2.2. Subsequent Verification. - For subsequent verifications, the tolerance values apply regardless of the influence factors in effect at the time of the verification. (Also see G-N.2.)

T.2.3. Multi-interval (Variable Division-Value) Devices. - For multi-interval devices, the tolerance values are based on the value of the device division of the range in use.

T.3. Tolerance Values. - The maintenance and acceptance tolerance values shall be ± 1 d. These tolerances apply regardless of the shape or material of the object being measured unless otherwise marked on the device.

T.4. Position Tests. - For a test standard measured several times in different positions by the device all indications shall be within applicable tolerances.

T.5. Influence Factors. - The following factors are applicable to tests conducted under controlled conditions only.

T.5.1. Temperature. - Devices shall satisfy the tolerance requirements under the following temperature conditions.

T.5.1.1. Temperature Limits. - If not marked on the device, the temperature limits shall be:

-10 °C to 40 °C (14 °F to 104 °F).

T.5.1.2. Minimum Temperature Range. - If temperature limits are specified for the device, the range shall be at least 30 °C or 54 °F.

T.5.1.3. Temperature Effect on Zero Indication. - The zero indication shall not vary by more than one division per 5 °C (9 °F) change in temperature.

T.5.2. Power Supply Voltage. - Devices shall satisfy the applicable tolerances when subjected to power

Table S.4.1.a. Marking Requirements

To Be Marked With	Multiple Dimension Measuring Equipment			
	Multiple dimension measuring device and indicating element in same housing	Indicating element not permanently attached to multiple dimension measuring element	Multiple dimension measuring element not permanently attached to the indicating element	Other equipment (1)
Manufacturer's ID	x	x	x	x
Model Designation	x	x	x	x
Serial Number and Prefix	x	x	x	x (2)
Minimum and maximum dimensions for each side (3)	x	x	x	
Value of measuring division, d	x	x	x	
Temperature Limits (4)	x	x	x	
Minimum & Maximum speed (5)	x	x	x	
Special Application (6)	x	x	x	
Limitation of Use (7)	x	x	x	

supply voltage variation of -15 percent to +10 percent of the voltage rating specified by the manufacturer.

T.6. Disturbances, Field Evaluation. - The following requirements apply to devices when subjected to disturbances which may normally exist in the surrounding environment. These disturbances include radio frequency interference (RFI), electromagnetic interference (EMI), acoustic changes, ambient light emissions, etc. The difference between the measurement indication with the disturbance and the measurement indication without the disturbance shall not exceed one division "d" or the equipment shall:

- (a) blank the indication, or
- (b) provide an error message, or
- (c) the indication shall be so completely unstable that it could not be interpreted, or transmitted into memory or to a recording element, as a correct measurement value.

UR. User Requirements

UR.1. Selection Requirements. - Equipment shall be suitable for the service in which it is used with respect to elements of its design, including but not limited to, its maximum capacity, value of the division, minimum capacity, and computing capability.

UR.1.1. Value of the Indicated and Recorded Division. - The value of the division recorded shall be the same as the division value indicated.

UR.2. Installation Requirements.

UR.2.1. Supports. - A device that is portable and is being used on a counter, table, or the floor shall be so positioned that it is firmly and securely supported.

UR.2.2. Foundation, Supports, and Clearance. - The foundations and support of a device installed in a fixed location shall be such as to provide strength, rigidity, and permanence of all components, and clearance shall be provided around all live parts to the extent that no contacts may result when the measuring element is empty, nor throughout the performance

Table S.4.1.b
Notes for Table S.4.1.a.

1. Necessary to the dimension and/or volume measuring system, but having no effect on the measuring value, e.g. auxiliary remote display, keyboard, etc.
2. Modules without "intelligence" on a modular system (e.g., printer, keyboard module, etc.) are not required to have serial numbers.
3. The minimum and maximum dimensions can be shown as follows:
 Length: min. _____ max. _____
 Width: min. _____ max. _____
 Height: min. _____ max. _____
4. Required if the range is other than -10 to 40 °C (14 to 104 °F).
5. If the multiple dimension measuring device requires that the object or device be moved relative to one another, the minimum and maximum speeds are marked which enable the device to make measurements that are within the applicable tolerances shall be marked.
6. A device designed for a special application rather than general use shall be conspicuously marked with suitable words visible to the operator and the customer restricting its use to that application.
7. Materials, shapes, structures, or object orientations that are inappropriate for the device or those that are appropriate.

range of the device such that the operation or performance of the device is adversely affected.

UR.2.3. Protection From Environmental Factors. - The indicating and measuring elements of a device shall be adequately protected from environmental factors such as wind, weather, and RFI that may adversely affect the operation or performance of the device.

UR.3. Use Requirements.

UR.3.1. Minimum and Maximum Measuring Ranges. - A device shall not be used to measure objects smaller than the minimum or larger than the maximum dimensions marked on the device.

UR.3.2. Special Designs. - A multiple dimension measuring device designed and marked for a special application shall not be used for other than its intended purpose.

UR.4. Maintenance Requirements.

UR.4.1. Zero or Ready Condition. - The zero-setting adjustment of a multiple dimension measuring device shall be maintained so that, with no object in or on the measuring element, the device shall indicate or record a zero or ready condition.

UR.4.2. Level Condition. - If a multiple dimension measuring device is equipped with a level-condition indicator, the device shall be maintained in a level condition.

UR.4.3. Device Modification. - The measuring capabilities of a device shall not be changed from the manufacturer's design unless the modification has been approved by the manufacturer and the weights and measures authority having jurisdiction over the device.

Definitions.

billed weight. The weight used in the computation of the freight, postal, or storage charge, whether actual weight or dimensional weight.

"d", dimension division value. The smallest increment that the device displays for any axis and length of object in that axis.

dimensional weight (or dim. weight). A value computed by dividing the object's volume by a conversion factor; it may be used for the calculation of charges when the value is greater than the actual weight.

measuring element. That portion of a complete device which does not include the indicating element.

Appendix D (Item 360-2)

Proposed Code for Automatic Weighing Systems

This tentative Code has only a trial or experimental status and is not intended to be enforced. The requirements are designed for study prior to the development and adoption of a final Code for Automatic Weighing Systems. If upgraded to become a permanent code, all requirements, except those for tolerances, will be non-retroactive as of the effective date of the permanent code; tolerance requirements will apply retroactively as of the effective date of the permanent code.

A. Application

A.1. - This code applies to devices used to weigh packages of food products or to fill packages while the object is in motion.

This includes:

- (a) Weigh-labelers
- (b) Automatic checkweighers

A.2. - This code does not apply to:

- (a) Belt-conveyor scales
- (b) Railway Track Scales
- (c) Monorail Scales
- (d) Devices that measure quantity on a time basis
- (e) Controllers or other auxiliary devices except as they may effect the weighing performance

A.3. - Also see General Code requirements.

S. Specifications

S.1. Design of Indicating and Recording Elements and of Recorded Representations.

S.1.1. Zero Indication.

- (a) A weigh-labeler shall be equipped with an indicating or recording element. It shall either indicate or record a zero-balance condition and an out-of-balance condition on both sides of zero.
- (b) An automatic checkweigher may be equipped with an indicating or recording element.
- (c) A zero-balance condition may be indicated by other than a continuous digital zero indication,

provided that effective automatic means is provided to inhibit a weighing operation or to return to a continuous digital indication when the device is in an out-of-balance condition.

S.1.1.1. Digital Indicating Elements.

- (a) A digital zero indication shall represent a balance condition that is within $\pm \frac{1}{2}$ the value of the scale division.
- (b) A digital indicating device shall either automatically maintain a "center of zero" condition to $\pm \frac{1}{4}$ scale division or less, or have an auxiliary or supplemental "center-of-zero" indicator that defines a zero-balance condition to $\pm \frac{1}{4}$ of a scale division or less.
- (c) Verification of the accuracy of the center of zero indication to $\pm \frac{1}{4}$ of a scale division or less during dynamic operation is not required on automatic checkweighers.

S.1.2. Value of Division Units. - The value of a division "d" expressed in a unit of weight shall be equal to:

- (a) 1, 2, or 5; or
- (b) a decimal multiple or submultiple of 1, 2, or 5;

S.1.2.1. Weight Units. - An Automatic weighing system shall indicate weight values using only a single unit of measure.

S.1.3. Provision for Sealing.

For Automatic Checkweighers: Security seals are not required in field applications where it would prohibit an authorized user from having access to the calibration functions of the device.

For all other devices: The device shall be designed with provision(s) for applying a security seal that must be broken, or for using other approved means of

providing security (e.g., data change audit trail available at the time of inspection), before any change that detrimentally affects the metrological integrity of the device can be made to any electronic mechanism.

S.1.4. Audit Trail. - Audit trails shall use the format set forth in Table 2.

S.1.5. Automatic Calibration - A device may be fitted with an automatic or a semi-automatic calibration mechanism. This mechanism shall be incorporated inside the device. After sealing, neither the mechanism nor the calibration process shall facilitate fraud.

S.1.6. Adjustable Components. - An adjustable component shall be held securely in adjustment and, except for a zero-load balance mechanism, shall be located within the housing of the element.

S.2. Design of Zero and Tare mechanisms.

S.2.1. Zero Load adjustment.

S.2.1.1. Automatic Zero-Setting Mechanism. - Except for automatic checkweighers, under normal operating conditions the maximum load that can be "rezeroed," when either placed on or removed from the platform all at once, shall be 1.0 scale division.

S.2.1.2. Initial Zero-Setting Mechanism. - Except for automatic checkweighers, an initial zero-setting mechanism shall not zero a load in excess of 20 percent of the maximum capacity of the Automatic weighing system unless tests show that the scale meets all applicable tolerances for any amount of initial load compensated by this device within the specified range.

S.2.2. Tare. - On any automatic weighing system the value of the tare division shall be equal to the value of the division. The tare mechanism shall operate only in a backward direction (i.e., in a direction of underregistration) with respect to the zero-load balance condition of the automatic weighing system. A device designed to automatically clear any tare value shall also be designed to prevent the automatic clearing of tare until a complete transaction has been indicated.

Note: On a computing scale, this requires the input of a unit price, the display of the unit price, and a computed positive total price at a readable equilibrium. Other devices require a complete weighing operation, including tare, net, and gross weight determination.

S.3.1. Multiple Range and Multi-Interval Automatic Weighing System. The value of "e" shall be equal to the value of "d."

S.3.2. Load Cell Verification interval value. - The relationship of the value for the load cell verification scale interval, v_{\min} , to the scale division, d, for a specific scale installation shall be:

$$v_{\min} \leq \frac{d}{\sqrt{N}}$$

where N is the number of load cells in the scale.

Note: When the value of the scale division, d, is different than the verification scale division, e, for the scale, the value of e must be used in the formula above.

S.3.3. - For automatic checkweighers the value of "e" shall be specified by the manufacturer and may be larger than "d," but in no case can "e" be more than 10 times the value of "d."

S.4. Weight Indicators, Weight Displays, Reports, and Labels.

S.4.1. Weight Units. - An indicating or recording element shall indicate weight values using only a single unit of measure.

S.4.2. Additional Digits in Displays. - Auxiliary digital displays that provide additional digits for use during performance evaluation may be included on automatic checkweighers. However, in cases where these indications are not valid for determining the actual weight of a package (e.g., only appropriate for use in statistical process control programs by users) they shall be clearly and distinctly differentiated from valid weight displays by indicating them to the user. For example, the additional digits may be differentiated by color, partially covered by placing crosshatch overlays on the display, or made visible only after the operator presses a button or turns a key to set the device in a mode which enables the additional digits.

S.4.3. Weight Indication. - An indicating element equipped with other than automatic recording elements shall be equipped with effective means to permit the recording of weight values only when the indication is stable within plus or minus 1 scale division. The values recorded shall be within applicable tolerances.

S.4.4. Over Capacity Indication. - An indicating or recording element shall not display nor record any

values when the scale capacity is exceeded by 9 scale divisions.

S.4.5. Label Printer. - A device that produces a printed ticket to be used as the label for a package shall print all values digitally and of such size, style of type, and color as to be clear and conspicuous on the label.

S.5. Accuracy Class.

S.5.1. Marking. - Weigh-labelers and automatic checkweighers shall be class III devices and marked accordingly.

S.6. Divisions. - The number of divisions for device capacity is designated by the manufacturer and shall comply with parameters shown in Table 1.

S.7. Sealing Requirements.

S.8. Marking Requirements. [See also G-S.1., G-S.4., G-S.6., G-S.7., G-U .2.1.1., and UR.3.4.1.]

S.8.1. Location Of Marking Information. - Automatic weighing systems that are not permanently attached to an indicating element, and for which the load-receiving element is the only part of the weighing/load-receiving element visible after installation, may have the marking information required in G-S.1. of the General Code and Table 3.a. and marking notes of the Automatic weighing system Code located in an area that is accessible only through the use of a tool; provided that the information is easily accessible (e.g., the information may appear on the junction box under an access plate). The identification information for these automatic weighing systems shall be located on the weighbridge (load-receiving element) near the point where the signal leaves the weighing element or beneath the nearest access cover.

S.8.2. Main Elements, and Components of Weighing Systems or Weighing Systems. - Main elements, and components of weighing for automatic weighing systems when not contained in a single enclosure for the entire automatic weighing system, or weighing systems, load cells for which Certificates of Conformance (CC) have been issued under the National Type Evaluation Program, and other equipment necessary to a weighing system, but having no metrological effect on the weighing system, shall be marked as specified in Table 3.a. and explained in the accompanying notes.

N. Notes

N.1. Test Requirements for Automatic Weighing Systems.

N.1.1. Test Pucks and Packages. - Test pucks and packages shall be:

- (a) Representative of the type, size, and weight ranges to be weighed on the device; constructed of a solid, constant mass, non-hygroscopic, non-electrostatic, and non-magnetic type of material.

- (b) Constructed so that metal-to-metal contact is avoided.

- (c) Be stable while in motion, thus the length and width of a puck or package should be greater than its height.

- (d) For type evaluation the manufacturer shall supply the test pucks or packages for each weight range of testing.

N.1.2. Accuracy of Test Pucks or Packages. - The error in any test puck or package shall not exceed one-fourth (1/4) of the acceptance tolerance. If packages are used to conduct field tests on automatic weighing systems, the package weights shall be determined on a reference scale or balance with an inaccuracy that does not exceed one-fifth (1/5) of the smallest tolerance that can be applied to the device under test.

N.1.3. Verification (Testing) Standards. - Field standard weights used in verifying weighing devices shall comply with requirements of NIST Handbook 105-1 (Class F) or the tolerances expressed in Fundamental Considerations, paragraph 3.2. (i.e., one-third of the smallest tolerance applied.)

N.1.4. Label Printing. - If an automatic checkweigher prints a label containing weight information that will be used in a commercial transaction, it must conform to all the requirements specified for weigh labelers so that the printed ticket meets appropriate requirements.

N.2. Test Requirements for Automatic Weighing Systems.

N.2.1. Tests Loads. - A performance evaluation shall consist of four separate test runs conducted at different test loads according Table 5:

Table 1
Parameters for Accuracy Classes

Class	Value of the verification division (d or e)	Number of divisions (n)	
		Minimum	Maximum
SI Units			
III	0.1 to 2g inclusive	100	10,000
	equal to or greater than 5g	500	10,000
INCH-POUND Units			
III	0.0002 lb to 0.005 lb, inclusive	100	10,000
	0.005 oz to 0.125 oz, inclusive	100	10,000
	equal to or greater than 0.01 lbs	500	10,000
	equal to or greater than 0.25 oz	500	10,000

For Class III devices, the value of "e" is specified by the manufacturer as marked on the device; "d" shall not be smaller than 0.1 "e." "e" shall be differentiated from "d" by size shape, or color.

N.2.2. Influence Factor Testing. - Influence factor testing shall be conducted statically.

center and front, left, back and right edges of the load receiver.

N.3. Test Procedures - Weigh Labelers. - If the device is designed for use in static weighing, it shall be tested statically using mass standards. Note: If the device is designed for only dynamic weighing it shall only be tested dynamically.

N.3.1.4. Discrimination Test. - A discrimination test shall be conducted with the weighing device in equilibrium at zero load and at maximum test load, and under controlled conditions in which environmental factors are reduced to the extent that they will not affect the results obtained. This test is conducted from just below the lower edge of the zone of uncertainty for increasing load tests, or from just above the upper edge of the zone of uncertainty for decreasing-load tests.

N.3.1. Laboratory - Static Tests.

N.3.1.1. Increasing-Load Test. - The increasing-load test shall be conducted with the test loads approximately centered on the load-receiving element of the scale.

N.3.1.5. Zero-Load Balance Change. - A zero-load balance change test shall be conducted on all automatic weighing systems after the removal of any test load. The zero-load balance should not change by more than the minimum tolerance applicable. (Also see G-UR.4.2.)

N.3.1.2. Decreasing-Load Test. - The decreasing-load test shall be conducted with the test loads approximately centered on the load-receiving element of the scale.

N.3.1.6. Influence Factor Testing. - Influence factor testing shall be conducted.

N.3.1.3. Shift Test. - To determine the effect of off-center loading, a test load equal to one-half ($\frac{1}{2}$) maximum capacity shall be placed in the center of each of the four points equidistant between the

Table 2
Categories of Device and Methods of Sealing

Categories of Device	Method of Sealing
Category 1: No Remote configuration capability	Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.
Category 2: Remote configuration capability, but access is controlled by physical hardware Device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode.	The hardware enabling access for remote communication must be at the device and sealed using a physical seal or two event counters: one for calibration parameters and one for configuration parameters.
Category 3: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password)	An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter. A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to ten times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)

Figure 2

N.3.2. Laboratory - Dynamic Tests. - The device shall be tested at the highest speed for each weight range using standardized test pucks or packages. Test runs shall be conducted using four test loads as described in Table 5. Each test load shall be run a minimum of 10 consecutive times.

N.3.2.1. Shift Test. - To determine the effect of eccentric loading, for devices without a means to align packages, a test load equal to One-third (1/3) maximum capacity shall be passed over the load receiver or transport belt (1) half-way between the center and front edge, and (2) halfway between the center and back edge.

N.3.3. Field Test Procedures

N.3.3.1. Static Tests. - If the automatic weighing system is designed to operate statically, and used in that manner, during normal use operation, it shall be tested statically using mass standards. The device shall not be tested statically if it is used only dynamically.

N.3.3.2. Dynamic Tests. - The device shall be tested at the normal operating speed using packages. Test runs should be conducted using at least two test loads distributed over its normal weighing range (e.g., at the lowest and highest ranges in which the device is typically operated.) Each test load should be run a minimum of 10 consecutive times.

N.4. Test Procedures - Automatic Checkweigher

N.4.1. Laboratory - Static Tests. - If the scale is designed to operate statically during normal user operation, it shall be tested statically using the applicable weigh labeler requirements.

N.4.2. Laboratory - Dynamic Tests. - The device shall be tested at the highest speed in each weight range using standardized test pucks or packages. Test runs shall be conducted using four test loads. The number of consecutive test weighments shall be as described in Table 4.

Table 3.a.
Marking Requirements

Weighing Equipment	Weighing, load-receiving, and indicating element in same housing	Indicating element not permanently attached to weighing and load-receiving element	Weighing and load-receiving element not permanently attached to indicating element	Load cell with CC (11)	Other equipment or device (10)
To Be Marked With					
Manufacturer's ID (1)	X	X	X	X	
Model Designation(1)	X	X	X	X	
Serial Number and Prefix(2)	X	X	X	X	
Accuracy Class (14)	X	x (8)	X	X	X
Nominal Capacity(3)(15)	X	X	X		X
Value of Division, d (3)	X	X			X (13)
Value of "e" (4)	X	X			
Temperature Limits (5)	X	X	X	X	
Special Application (11)	X	X	X		
Maximum Number of Scale Divisions n _{max} (6)		x (8)	X	X	
Minimum Verification Division (e _{min})			X		
"S" or "M" (7)				X	
Direction of Loading (13)				X	
Minimum Dead Load				X	
Maximum Capacity (Max)	X			X	
Minimum Capacity (Min)	X				
Safe Load Limit				X	
Load Cell Verification Interval (v _{min})				X	

Note: See Table 3.b. for applicable notes.

Table 3.b.

1. Manufacturer's identification and model designation. (See G-S.1.)
2. Serial number and prefix. (See G-S.1.)
3. The nominal capacity and value of the scale automatic weighing system division shall be shown together (e.g., 50 000 x 5 Kg, or 30 x 0.01 lb) adjacent to the weight display when the nominal capacity and value of the scale automatic weighing system division are not immediately apparent. Each scale division value or weight unit shall be marked on variable-division value or division-unit scales automatic weighing systems.
4. Required only if different from "d."
5. Required only on automatic weighing systems if the range is other than -10 °C to 40 °C (14 °F to 104 °F).
6. This value may be stated on load cells in units of 1000; (e.g., n: 10 is 10 000 divisions.)
7. Denotes compliance for single or multiple load cell applications.
8. An indicating element not permanently attached to a weighing element shall be clearly and permanently marked with the accuracy Class III, and the maximum number of divisions, n_{max} .
9. Necessary to the weighing system but having no metrological effect, e.g., auxiliary remote display, keyboard, etc.
10. The markings may be either on the load cell or in an accompanying document; except that, if an accompanying document is provided, the serial number shall appear both on the load cell and in the document. The manufacturer's name or trademark, the model designation, and identifying symbol for the serial number shall also be marked both on the load cell and in any accompanying document.
11. An automatic weighing system designed for a special application rather than general use shall be conspicuously marked with suitable words visible to the operator and customer restricting its use to that application.
12. Required if the direction of loading the load cell is not obvious.
13. Serial number and prefix (See G-S.1) Modules without "intelligence" on a modular system (e.g., printer, keyboard module, cash drawer, and secondary display in a point-of-sale system) are not required to have serial numbers.
14. The accuracy Class of a device shall be marked on the device with the appropriate designation.
15. The nominal capacity shall be conspicuously marked on any automatic-indicating or recording automatic weighing system so constructed that the capacity of the indicating or recording element, or elements, is not immediately apparent.

N.4.3. Field Test Procedures.

N.4.3.1. Static Tests. - If the scale is designed to operate statically during normal user operation, it shall be tested statically according to section N.3.1..

N.4.3.2. Dynamic Tests. - The device shall be tested dynamically at the highest normal operating speed using packages at two test loads distributed over its normal weighing range. The number of consecutive weighments shall be one-half ($\frac{1}{2}$) of those specified in Table 4, but not less than 10.

T. Tolerances

T.1. Principles.

T.1.1. Design. - The tolerance for a weighing device is a performance requirement independent of the design principle used.

T.1.2. Scale Division. - The tolerance for a weighing device is related to the value of the scale division (d) or the value of the verification scale division (e) and is generally expressed in terms of d or e. The random

tolerance for automatic checkweighers is expressed in terms of Maximum Allowable Variance (MAV).

Table 4. Number of Sample Weights per Test for Automatic Checkweighers

Weighing Range m = mass of test Load	Number of samples weights per test
20 divisions $\leq m \leq 10$ kg 20 divisions $\leq m \leq 22$ lb	60
10 kg $< m \leq 25$ kg 22 lb $< m \leq 55$ lb	32
25 kg $< m \leq 100$ kg 55 lb $< m \leq 220$ lb	20
100 kg (220 lb) $< m$	10

Table 5. Test Loads

At or near minimum capacity
At or near maximum capacity
At two (2) critical points between minimum and maximum capacity
Test may be conducted at other loads if the device is intended for use at other specific capacities

T.2. Tolerance Application.

T.2.1. General. - The tolerance values are positive (+) and negative (-) with the weighing device adjusted to zero at no load. When tare is in use, the tolerance values are applied from the tare zero reference; the tolerance values apply to certified test loads only.

T.2.2. Type Evaluation Examinations. - For type evaluation examinations, the tolerance values apply to increasing and decreasing load tests within the temperature, power supply, and barometric pressure limits specified in T.7.

T.2.3. Multiple Range and Multi-Interval Automatic Weighing System - For multiple range and multi-interval devices, the tolerance values are based on the value of the scale division of the range in use.

T.3. Tolerance Values.

T.3.3 1 . Tolerance Values - Weigh Labeler.

T.3.31.1. Static Tests - Tolerance values shall be as specified in Table 6.

T.3.31.2. Dynamic Tests - Maintenance Tolerance values shall be as specified in Table 6.

Table 6 Class III - Tolerances in Divisions (d)

Maintenance	1	2	3	5
Acceptance	0.5	1	1.5	2.5
Class	Test Load in Divisions			
III	0 - 500	501 - 2000	2001 - 4000	4001+

T.3.2. Tolerance Values - Automatic Checkweighers.

T.3.2.1. Lab Tests.

Static Tests - The systematic error for each influence factor test run must be within the acceptance tolerances for the test load as specified in Table 6.

Dynamic Tests - (a) The systematic error for each test run must be within the acceptance tolerances for the test load as specified in Table 5.

(b) The standard deviation of the results shall not exceed one-ninth (1/9) of the Maximum Allowable Variation (MAV) for specific package weights (3 standard deviations cannot exceed one-third (1/3) of the MAV value) as required in NIST Handbook 133 - Table 2-12. This value does not change regardless of whether acceptance, or maintenance tolerances are being applied to the device under test.

T.3.2.2. Field Tests. -

Static Tests - Requirements for the systematic error shall not be applied during field tests.

Dynamic Tests - The standard deviation of the results cannot exceed one-ninth (1/9) of the Maximum Allowable Variation for specific package weights (3 standard deviations cannot exceed one-third (1/3) of the MAV value) as required in NIST Handbook 133 - Table 2-12. This value does not change regardless of whether acceptance, or maintenance tolerances are being applied to the device under test.

T.4. Agreement of Indications. - In the case of a weighing system equipped with more than one indicating element or indicating element and recording element combination, the difference in the weight value indications of any load shall not be greater than the absolute value of the applicable tolerance for that load, and shall be within tolerance limits.

T.5. Repeatability. - The results obtained from several weighings of the same load under reasonably static test conditions shall agree within the absolute value of the maintenance tolerance for that load, and shall be within applicable tolerances.

T.6. Discrimination. - A test load equivalent to 1.4 d shall cause a change in the indicated or recorded value of at least 2.0d. This requires the zone of uncertainty to be not greater than 0.3 d (See N.3.1.4.)

T.7. Influence Factors. - The following factors are applicable to tests conducted under controlled conditions only.

T.7.1. Temperature. - Devices shall satisfy the tolerance requirements under the following temperature conditions:

T.7.1.1. - If not specified in the operating instructions or if not marked on the device, the temperature limits shall be: -10 °C to 40 °C (14 °F to 104 °F)

T.7.1.2. - If temperature limits are specified for the device, the range shall be at least 30 °C (54 °F).

T.7.1.3. Temperature Effect on Zero-Load Balance. - The zero-load indication shall not vary by more than one division per 5 °C (9 °F) change in temperature.

T.7.1.4. Operating Temperature. - The indicating or recording element shall not display nor record any usable values until the operating temperature necessary for accurate weighing and a stable zero balance condition have been attained.

T.7.2. Barometric Pressure. - The zero indication shall not vary by more than one scale division for a change in barometric pressure of 1 kPa over the total barometric pressure range of 95 kPa to 105 kPa (28 in of Hg).

T.7.3. Electric Power Supply.

T.7.3.1. Power Supply, Voltage and Frequency.

- (a) Weighing devices that operate using alternating current must perform within the conditions defined in paragraphs T.3. through T.7., inclusive, over the line voltage range of 100 V to 130 V or 200 V to 250 V rms as appropriate, and over the frequency range of 59.5 Hz to 60.5 Hz.
- (b) Battery operated instruments shall not indicate nor record values outside the applicable tolerance limits when battery power output is excessive or deficient.

T.7.3.2. Power Interruption.

- A power interruption shall not cause an indicating or recording element to display or record any values outside the applicable tolerance limits.

T.8. Radio Frequency Interference (RFI) and Other Electromagnetic Interference Susceptibility. - The difference between the weight indication with the disturbance and the weight indication without the disturbance shall not exceed one division (d) or the equipment shall:

- (a) blank the indication, or
- (b) provide an error message, or
- (c) the indication shall be so completely unstable that it could not be interpreted, or transmitted into memory or to a recording element, as a correct measurement value.

UR. User Requirements

UR.1. Selection Requirements. - Equipment shall be suitable for the service in which it is used with respect to elements of its design, including but not limited to, its capacity, number of scale divisions, value of the scale division or verification scale division, minimum capacity, and computing capability.

UR.1.1. General. - Automatic Weighing Systems shall be designated by the manufacturer for that service.

UR.1.2. Value of the Indicated and Recorded Scale Division. - The value of the division as recorded shall be the same as the division value indicated.

UR.2. Installation Requirements.

UR.2.1. Protection From Environmental Factors. - The indicating elements, the lever system or load cells, and the load-receiving element of a permanently installed scale, and the indicating elements of a scale not intended to be permanently installed, shall be adequately protected from environmental factors such as wind, weather, and RFI that may adversely affect the operation or performance of the device.

UR.2.2. Foundation, Supports, and Clearance. - The foundation and supports of any scale installed in a fixed location shall be such as to provide strength, rigidity, and permanence of all components, and clearance shall be provided around all live parts to the extent that no contacts may result when the load-receiving element is empty, nor throughout the weighing range of the scale.

UR.2.3. Entry and Departure from weighing area.

- The belt or other conveyance that introduces the weighed load to the weighing zone and that carries the weighed load away from the weighing zone shall be maintained per the manufacturer's recommendations.

UR.3. Use Requirements.

UR.3.1. Minimum Load. - The minimum load as specified by the manufacturer, but not less than 20 divisions since the use of a device to weigh light loads is likely to result in relatively large errors.

UR.3.2. Maximum Load. - An automatic weighing system shall not be used to weigh a load of more than the maximum capacity of the automatic weighing system.

UR.3.3. Special Designs. - An automatic weighing system designed and marked for a special application shall not be used for other than its intended purpose.

UR.3.4. Use of Manual Gross Weight Entries. - Manual entries are permitted only when a device or system is generating labels for standard weight packages.

UR.4. Maintenance Requirements.

UR.4.1. Balance Condition. - If an automatic weighing system is equipped with a zero-load display, the zero-load adjustment of an automatic weighing system shall be maintained so that the device shall indicate or record a zero balance condition.

UR.4.2. Level Condition. - If an automatic weighing system is equipped with a level-condition indicator, the automatic weighing system shall be maintained in level.

UR.4.3. - Automatic Weighing System Modification.

- The length or the width of the load-receiving element of an automatic weighing system shall not be increased beyond the manufacturer's design dimension, nor shall the capacity of an automatic weighing system be increased beyond its design capacity by replacing or modifying the original primary indicating or recording element with one of a higher capacity, except when the modification has been approved by competent engineering authority, preferably that of the engineering department of the manufacturer of the automatic weighing system, and by the weights and measures authority having jurisdiction over the automatic weighing system.

D. Definition of Terms

D.1. Automatic Weighing System (AWS). - An automatic weighing system is a weighing device that, in combination with other hardware and/or software components, automatically weighs discrete items. Examples include, but are not limited to, weigh labelers and checkweighers.

D.1.1. Automatic Checkweigher. - A dynamic automatic weighing system used to subdivide items of different weights into one or more subgroups, such as identifying packages that have acceptable or unacceptable fill levels. These systems may be used to fill standard packages for compliance with net weight automatic weighing system and incorporate conveyor systems.

D.1.2. Weigh Labeler. - An automatic weighing system that determines the weight of a package and prints a label or other document bearing a weight declaration for each discrete item (usually a label also includes unit and total price declarations). Typically, this type of weighing system determines the weight of packages dynamically, but may also include a that is incorporated in a conveyor system that weighs packages in a static weighing mode. Weigh/labelers are sometimes used to weigh and label standard and random packages (also called "Prepackaging Scales").

D.2. Terms used in the Testing of Automatic Weighing Systems.

D.2.1. Package Rate. - PPM - Packages per minute.

D.2.2. Test Puck. - Metal or plastic object used to simulate a package. Pucks can be made in a variety of dimensions and have different weights to represent a wide range of package sizes. Metal versions may be covered with rubber cushions to eliminate the possibility of damage to weighing and handling equipment. The puck mass is adjusted to specific accuracy so the pucks can be used to conduct performance tests.

D.2.3. Average (systematic) Error (\bar{x}). - The mean value of the error (of indication) for a number of consecutive automatic weighings of a load, or loads, passed over the load receiving element (e.g., weightable), shall be expressed mathematically as:

$$\bar{x} = \frac{\sum x}{n}$$

where:

- x = error of a load indication
- n = the number of loads

D.2.4. Random Error(s). - The standard deviation of the error (of indication) for a number of consecutive automatic weighings of a load, or loads, passed over the load receptor, shall be expressed mathematically as:

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n-1}}$$

where:

- x = error of a load indication
- n = the number of loads

Report of the Committee on Education, Administration, and Consumer Affairs

Maxwell H. Gray, Chairman
 Chief, Weights and Measures and Consumer Affairs
 Florida Department of Agriculture
 Tallahassee, Florida

Reference
 Key No.

400

This Report of the Committee on Education, Administration, and Consumer Affairs for the 80th Annual Meeting of the National Conference on Weights and Measures consists of the Interim Report offered in the NCWM Publication 16, "Program and Committee Reports," as amended by the Addendum Sheets issued during the Annual Meeting.

Table A identifies all of the issues contained in the Report by Reference Key Number, Item Title, and Page Number. Voting items are marked with a "V" after the item number. Items marked with an "I" after the reference key number are informational items.

Table B lists the appendices to the report, and Table C provides a summary of the results of the voting on the Committee's items and the report in its entirety.

Included in the report are the proposed work plans for the Examination Procedure Outlines (EPO's) and training module revision. This plan has been designed to maximize use of the remaining NIST grant funds (see Item 402). Items 402-5 and 402-8 were the only voting items and both relate to the National Training Program. The two items were unanimously passed by the NCWM during the 80th Annual Conference.

Table A
Index to Reference Key Items

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**Table B
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F.	Oregon's Request for Restructure of the NTP's Training on Scales	402-4	269
G.	Anonymous Accident/Incident Report Form (Draft for Completion and Return)	406	270

Table C
Voting Results

Reference Key No.	House of State Representatives		House of Delegates		Results
	Yes	No	Yes	No	
402-5	41	0	45	0	Passed
402-8	40	0	45	0	Passed
400 (in entirety)	42	0	47	0	Passed

Details of All Items
(in order of Reference Key Number)

400 I Introduction

The Committee reviewed and discussed the following:

1. The final report of the Education, Administration, and Consumer Affairs Committee to the 37th Annual Technical Meeting of the Western Weights and Measures Association (October 1994).
2. The final report of the Education, Administration, and Consumer Affairs Committee to the 49th Annual Conference of the Southern Weights and Measures Association (October 1994).
3. The final report of the Administration and Public Affairs Committee to the Central Weights and Measures Association (CWMA Interim Meeting, September 1994).
4. The final report of the Committee on Administration and Public Affairs to the Central Weights and Measures Association (April 1995).
5. The final report of the Committee on Education, Administration, and Consumer Affairs of the Northeastern Weights and Measures Association (May 1995).
6. The shift in committee responsibilities to provide leadership to the weights and measures community through development and implementation of proactive strategies.

The positions taken by the regional associations on specific items appearing in this report are noted as part of the discussion of the items. The Committee would like to thank all of the regional associations for their valuable input.

401**I Program Evaluation Work Group**

The inaugural meeting of the Program Evaluation Work Group was held in Dallas, Texas, December 12 and 13, 1994, chaired by Darrell Guensler, California. The full report of the group appears in Appendix A. As an initial step toward its first goal, five weights and measures jurisdictions (California, Connecticut, Nebraska, Tennessee, and Texas) have agreed to participate in a program evaluation pilot project. The project is designed to demonstrate that a uniform core of program data can be collected into a centralized database, communicated across jurisdictional lines, and finally analyzed, all through computer automation. The working group's initial focus will be to determine a core of data that each jurisdiction must collect, then establish uniform data collection procedures. The design of the database will include customization of the computer software to permit individual jurisdictions to retrieve data which meets their special local needs. Ultimately, the collected data will provide performance, cost, and marketplace equity and trend indicators, as well as information on program benefits to consumers and businesses.

Industry members have volunteered to identify sources of marketplace production figures which will be utilized for later analysis of the economic impact of weights and measures activities.

Gilles Vinet, Industry Canada, presented an overview of the Canadian Weights and Measures Inspection Information System. The new system is expected to go on-line in April 1995, thereby giving Industry Canada headquarters, regions, and districts access to each regional database. Captured information includes: time utilization for all staff, device inspection, commodity inspection, and standards calibration. Local inspectors will enter report data directly on personal computers; that data will be imported to any region, district, or headquarters. The information can then be printed directly in reports, on screen, or on file, for retrieval in Lotus, Excel, Quattro Pro, etc. The captured data ultimately will be used for program planning and evaluation at the headquarters, regional, and district levels.

402**I National Training Program (NTP)**

A summary of current participation by individual jurisdictions in the NTP Certification Program is provided in Appendix B. Appendix C delivers a summary of activity and information in the NTP Registry from 1985 through June 1995.

The status of the funds remaining under the second grant provided by the National Institute of Standards and Technology (NIST) to the NCWM for the development of training materials for weights and measures officials is as follows (as of June 30, 1995):

Net outlays to date:	\$ 84,115.72
Total grant funds authorized:	180,000.00
Balance of funds:	95,884.28

The Committee is investigating options available for the most effective use of remaining grant funds. Areas under consideration include: redesign of NTP's training on scales (see Items 402-3 and 402-8), development of short courses, correspondence courses, interactive videos, maintenance and updating of existing training materials, updating NCWM Publication 12, Examination Procedure Outlines (EPO's), and to foster implementation of a mentoring program for identified trainers as referred to in Item 402-6.

The following is a proposed work plan which will effectively use grant funds for updating the Examination Procedure Outlines (EPO's) and for module revision:

Proposed Work Plan for EPO and Module Revisions

Examination Procedure Outlines:

1. Contract to prepare a complete revision of NCWM Publication 12 Examination Procedure Outlines for Weighing and Measuring Devices
 - ✓ Update the EPOs to reflect the 1996 Edition of NIST Handbook 44 .
 - ✓ Revise the publication to follow the detailed format of a NCWM Publication 14 Checklist.

- ✓ Consider using two contractors: one for scales and weighing systems, and one for measuring devices.
- ✓ This work is needed to assist the Program Evaluation Working Group in developing easy to follow test procedures.

NCWM Training Modules:

1. At such time as they are revised, amend all modules to reflect the NTP course renumbering as adopted by the NCWM.
2. Contract to prepare a complete revision of NCWM Module 10 (601), "Checking the Net Contents of Packaged Goods":

- ✓ Update the module to reflect the Fourth Edition of NIST Handbook 133.
- ✓ Have the contractor attend an Instructor Training School to gain an understanding of the course material and how it is presented.
- ✓ Revise the format to allow the course to be taught in two-parts.

Part 1. Items Labeled by Weight:

Introduction	Forms
Legal Requirements	Terms and Definitions
Sample Collection	Random and Standard Packages
Equipment Requirements	Etc.

Part 2. Items Labeled by Volume, Length, and Area Gravimetric Test Procedures

- ✓ Update all text and graphics and develop new quizzes and examinations.
- ✓ Eliminate the separate manual for instructors by preparing a small, easy to use instructor's guide that does not duplicate material in the inspector's manual.

3. Contract to prepare a complete revision of NCWM Module 8 (302), "Retail Motor Fuel Dispensers and Consoles"

- ✓ Update the module to reflect the Fourth Edition of NIST Handbook 133.
- ✓ Have the contractor work with OWM staff to incorporate revisions to ensure the contractor understands the course material and how it is presented.
- ✓ Eliminate the separate manual for instructors by preparing a small, easy to use instructor's guide that does not duplicate material in the inspector's manual.

4. Contract to prepare a complete revision of NCWM Module 21 (305) "Liquefied Petroleum Gas Liquid Measuring Devices"

- ✓ Update the module to reflect the 1996 Edition of NIST Handbook 44
- ✓ Have the contractor work with OWM staff to ensure the contractor understands the course material and how it is presented.
- ✓ Eliminate the separate manual for instructors by preparing a small, easy to use instructor's guide that does not duplicate material in the inspector's manual.

The Committee reviewed the responses from State Directors to a questionnaire eliciting information on existing and future training activity within their jurisdictions. The results of the survey appear in Appendix D of this report and indicate which program areas have been selected to receive allocation of training resources.

The responses received from 53 State Directors show that 81% have already or are planning future training for weights and measures staff. The survey shows the greatest number of planned classes: (1) Checking the Net Contents of Packaged Goods and Handbook 133 training (combined), (2) general weights and measures training, and (3) Vehicle and Axle-Load Scales. Of those jurisdictions responding, 64% indicate willingness to have their planned classes included in the NCWM Training Calendar.

402-2 I Associate Membership Scholarship Fund-Training Delivery

The Committee received a report covering the allocation of 22-\$500 scholarships awarded to U.S. weights and measures officials by the Associate Membership Committee. The scholarships were authorized for use during the period August 1, 1994, through July 31, 1995. All authorized training has been completed with that activity shown in Appendix E of this report.

With participation from the Associate Membership Committee, the EA&CA Committee discussed the success of the initial scholarship program and explored avenues for continuing the project. The AMC graciously extended the scholarship program to include 20-\$500 scholarships to be awarded by the EA&CA to U.S. weights and measures officials for completion of formal weights and measures training to be completed by July 31, 1996. The Committee expressed appreciation to the Associate Membership Committee, as well as gratitude to all industry members for their support of the scholarship program.

402-3 I Redesign of the NTP's Training on Scales

At the 79th Annual NCWM, the Conference approved the Committee's strategy for redesign of the five current scales training classes, namely: retail computing, medium-capacity, vehicle and axle-load, meat beam and monorail, and livestock and animal scales. The restructured training will consist of two self-study courses (See Item 402-8), followed by classroom instruction in specific classes of scales.

Under the approved renumbering system (see Item 402-8), successful completion of two self-study classes, Course No. 102, Introduction to Handbook 44, and the new Course No. 201, Introduction to Handbook 44 Scales Code, would be a recommended prerequisite to classroom training in any of the specific classes of scales. The classroom training will include hands-on demonstrations and practice sessions. The training materials will include Examination Procedure Outlines (EPO's), but will not contain reprints of Handbook 44. The handbook itself will be made available to participants for reference as needed. A checklist will then be utilized to complete the inspection portion of the class to demonstrate proficiency in the inspection procedure portion of the classroom training.

The Oregon Department of Agriculture Measurement Standards Division has submitted a proposal to the NCWM, through the Western Weights and Measures Association (see Appendix F), to develop a home study course which would allow inspectors to earn CEU's for successful completion of NCWM training courses by mail, or electronically, via computer with E-mail, or other means of office automation. The Committee has partially addressed this request as outlined above through the self-study introductory courses cited, and will continue to seek methods and means to deliver a diversity of courses using interactive videos, and other available technologies.

402-4 I NCWM Training Modules Update and Maintenance

The Committee has adopted a plan to optimally utilize the skills of certified trainers, as well as those of a core group of trainers designated to update and maintain NCWM training materials (see also 402-6 and 402-8).

The chart on the following page presents a summary of the revision status of all currently published NCWM training modules; the chart also reflects the approved renumbering system, subject of Voting Item 402-8.

**Module Revision Status
(As of 6/30/95)**

Module (Proposed New Course Numbers, Item 402-8, Appear in Parentheses)	Date of Publication	Date of Last Revision	Revision Status*	Comments
27-Intro to Electronic Weighing and Measuring Systems (103)	1/28/85	5/95	N	Module revision has been completed and copies sent to the States on 5/1/95.
1-Retail Computing Scales - Mechanical	11/20/85	11/86	W	Information from this module has been incorporated into Module 2.
10-Checking the Net Contents of Packaged Goods (601)	11/29/85	9/90	R	The Committee is planning to split the module into two segments. The NCWM NIST Handbook 133 Work Group will assist in the revision of the module.
2-Retail Computing Scales-Electronic (202, combined with 1 above)	2/26/86	5/94	N	
8-Retail Motor Fuel Dispensers and Consoles (302)	7/14/86	9/90	N	T. Butcher & J. Williams, OWM are updating the Inspector's Manual for changes to Handbook 44
5-Vehicle and Axle Load Scales (206)	10/17/86	12/91	U	C. Cotsoradis of OWM is in the process of updating the Inspector's Manual of this module for changes to Handbook 44.
20-Vehicle Tank Meters (303)	10/31/86	12/91	U	T. Butcher and J. Williams of OWM have completed an update of the Inspector's Manual of this module.
6-Meat Beams and Monorail Scales (205)	4/3/87		U	Revision is underway by Jim Vanderwielen, USDA GIPSA
7-Livestock and Animal Scales (204)	5/27/87		U	Paul Petersen has submitted a second draft of the Inspector's Manual.
21-Liquefied Petroleum Gas Liquid Measuring Devices (305)	8/5/87		U	T. Butcher & J. Williams, OWM, have completed an update of the Inspector's Manual for changes to Handbook 44.
4-Medium Capacity Scales (203)	6/22/88	10/92	N	
24-Introduction to NIST Handbook 44 (102)	5/18/89	6/93	U	J. Mindte, OWM, will update the module for changes to Handbook 44.
22-Commodity Regulation (602)	6/8/90		N	
19-Loading Rack Meters (304)	7/18/90		N	
23-Weights & Measures Administration in the US Part I (101)	6/14/93		N	

*Key to module revision status abbreviations:

N = No revision planned in 1995

U = Revision is underway

R = Revision is planned for 1995

W = Withdrawn 7/1/93

Recommendation: The Committee recommended and the Conference adopted a "two-tiered" certification process, namely: Level 1: Witness Testing, and Level 2: Field Evaluation. Issuance of a Level 1 certificate will grant recognition to an individual who successfully completes the classroom segment of NTP Training and displays adequate knowledge in inspection and test procedures. The field test portion of Level 1 certification may be met by "witness testing." That is, conducting the inspection portion of the procedure, but only "witnessing" the test procedure when safety, legal, or other equipment restrictions are encountered. Issuance of Level 2 certification will grant recognition to an individual who successfully completes both the classroom and all field testing portions of the NTP Training. The two level certification process will apply to all functional modules; organizations should be aware that Level 1 certification may also apply to some managers and supervisors. The goal of achieving Level 2 Certification is strongly encouraged for all participants.

The Committee recommends marketing the current NTP certification process and its requirements to promote awareness that, in many cases, individuals who previously successfully completed NTP training have been and are, in fact, eligible for certification by virtue of their past experience in the field. The Committee further recommends revision of NCWM Publication 11, National Training Program, to correct any misunderstanding that only an NCWM Certified Trainer may oversee the field evaluation segment of the certification process. Revision of NCWM Publication 11 is recommended by the Committee to assist jurisdictions in identifying individuals who may qualify as certifying officers.

Background: The Committee reviewed and discussed the State of Ohio's recommendation that "witness testing" be considered as an option in the NTP Certification process. This option would be exercised in cases where classroom training has been successfully completed, but there are conditions that preclude participation in the field testing portion of the program. The proposal presents an alternative for participants who demonstrate competency in the classroom portion of the training and are capable of completing the field procedures but are prevented from completion because of policy restrictions. Ohio training and field staff cite the following as examples of nonclassroom situations which may affect field evaluation:

- Unique safety procedure guidelines for certain devices, e.g., vehicle scales;
- Additional licensing requirements governed by other regulatory agencies, e.g., special class driver's license to operate test vehicles on public highways;
- Liability restrictions;
- Multiagency inspection operations where the lead agency performs the "hands on" portion of device testing; and
- Unavailable test equipment, e.g., railway track scale car.

The Committee commented on the low percentage (34%) of those completing National Training Program (NTP) classes who have been certified to date. This may result, in part, from lack of a full understanding of the current certification process. Revision, updating, and distribution of NCWM Publication 11, National Training Program, should resolve any existing misconceptions about the program and translate into more individuals completing the NTP Certification process.

As of January 1995, 11 individuals have attained the status of NTP Certified Trainers. However, with the retirement of Don E. Stagg, Alabama, the following 10 persons comprise the cadre of Certified Trainers: Kenneth S. Butcher, NIST/OWM; Barbara J. DeSalvo, Ohio; Frank W. Forrest, Connecticut; Paul Peterson, USDA/GIPSA; Richard L. Philmon, Illinois; Thomas M. Stabler, IWM (Ret.); Richard C. Suiter, Nebraska; José A. Torres, Puerto Rico; James A. Vanderwielen, USDA/GIPSA; and Kenneth A. Wheeler, Ohio.

The Central Weights and Measures Association (CWMA) has identified as one of its goals the attainment of one Certified Trainer in each of its member States. There are now five Certified Trainers from the CWMA and three additional individuals are progressing toward trainer certification.

The Committee appointed Barbara DeSalvo as coordinator of a mentoring program designed to identify and utilize the trainers in each region. Status as a Certified Trainer is not a prerequisite for inclusion in the core group. One metrologist will also be invited to participate in this nucleus of trainers. It is planned to assemble the group electronically, through conference call or teleconferencing, for purposes of formulating a mission statement.

It is envisioned that each of the identified trainers will pursue completion of the Certified Trainer process, then select another individual for mentoring through the certification system, thereby adding continuing excellence to the base of Certified Trainers. It is projected that this group will develop and set in motion a plan to revise and update the existing training materials, particularly the individual scales modules.

Instructor Training in NIST Handbook 133. The Nutritional Labeling and Education Act was signed into law on November 8, 1990 to amend Title 21 Section 343 of the Federal Food, Drug, and Cosmetic Act (FDCA). The Act required nutritional labeling on foods and regulates health claims about nutrients to help consumers select a more healthful diet. The Act preempts State and local laws that are not "identical" to corresponding FDA requirements. The FDA regulation states, in part, (21 CFR Part 100.1 (c) (4), the phrase "not identical" does not refer to the specific words in the requirement, but means that the State or local requirement directly or indirectly imposes obligations or contains provisions that (1) are not imposed by or contained in an FDA requirement or (2) differ from those specifically imposed by or contained in an FDA requirement or implementing regulation.

On November 8, 1991, Federal preemption of the net quantity of contents regulations became effective. State and local regulations on quantity of contents (e.g., net quantity of contents regulations, sampling plans, and test procedures) under the NLEA not "identical" to Federal requirements continue to be preempted.

The National Conference on Weights and Measures (NCWM) has often emphasized the Conference's need for experienced, quality personnel to maintain the expanding level of training and education requests. At its November meeting, the Committee on Education, Administration, and Consumer Affairs endorsed the need for increased training delivery. In response to this proposal and numerous requests for training on procedures for testing the net quantity of packaged goods, NCWM/NIST is sponsoring a special instructor training course to be held in Annapolis, Maryland, March 26-31, 1995. Participants were selected from jurisdictions that agreed to the following conditions: (1) they intend to fully implement NIST Handbook 133 in their State within 3 months of completing the course, (2) they will use the March 1995 participant as an instructor to provide training on HB133 to officials in their State within 3 months of completing the course, and (3) they will permit the participant to serve as a trainer for the Office of Weights and Measures (OWM) in other regions of the country. The expected benefit of this training process is to develop a core group of 20 instructors who will, in turn, mentor other weights and measures officials in the area of commodity testing, thereby encouraging implementation of the Federal requirements.

This method of training delivery has proven so successful in providing a core group of instructors capable of mentoring to others, additional classes in net content inspection and device testing are planned for the remainder of 1995.

Future Training in NIST Handbook 133. As a result of the success of the first NCWM/NIST instructor training course, a second instructor training class is scheduled for August 13-18, 1995 in Annapolis, MD. Twenty new participants have been selected and all have agreed to the same training conditions as the first class.

The core group of instructors has trained in excess of 400 officials prior to the 80th NCWM Annual Meeting of the Conference, and by January 1996, it is anticipated that an additional 300 officials will have completed the training. In addition to training within his own State, for example, Donnie Perry from North Carolina represented the Office of Weights and Measures and conducted a Handbook 133 class in the State of South Carolina for 25 officials.

402-7 I Industry Training

A report was delivered to the Committee by the Institute for Weights and Measures (IWM) regarding weights and measures training courses and materials developed for industry by industry. At a conservative estimate, 20,000 industry personnel need weights and measures training, namely: maintenance personnel, repair personnel, and technicians who place devices in service.

IWM has identified that training is needed in Handbooks 44 and 133, and is adding "by-mail" and on-site courses in response to that need.

The Committee reviewed and discussed materials provided by Giant Food, Inc. (an Eastern States grocery chain), entitled, "The Weighting Game," a guide to weights and measures. This material is distributed to Giant Food employees

as part of the company's Quality Assurance Program and will be included in the NCWM Training Resource Catalog for use by industry and all interested weights and measures parties. The publication of the Training Resource Catalog is part of the Committee's work in progress.

402-8 V NTP Course Renumbering System

Recommendation: The Committee proposed and the Conference adopted the following system which is similar in format to the order of the sections in Handbook 44 and allows for expansion of course activity:

Introductory: Level 100

- | | |
|-----|---|
| 101 | Weights and Measures Administration, Part I |
| 102 | Introduction to Handbook 44 |
| 103 | Introduction to Electronic Weighing and Measuring Systems |

Scales: Level 200

- | | |
|-----|---|
| 201 | Introduction to Handbook 44 Scales Code |
| 202 | Retail Computing Scales |
| 203 | Medium-Capacity Scales |
| 204 | Livestock and Animal Scales |
| 205 | Meat Beams and Monorail Scales |
| 206 | Vehicle and Axle-Load Scales |

Meters: Level 300

- | | |
|-----|--|
| 301 | Introduction to Meters (planned) |
| 302 | Retail Motor-Fuel Dispensers and Consoles |
| 303 | Vehicle-Tank Meters |
| 304 | Loading-Rack Meters |
| 305 | Liquefied Petroleum Gas Liquid-Measuring Devices |

Measures: Level 400

Other Devices: Level 500 (linear, taximeters, etc.)

Commodities: Level 600

- | | |
|-----|---|
| 601 | Checking the Net Contents of Packaged Goods |
| 602 | Commodity Regulations |

Background: The Committee discussed the existing course identification system and its inherent limitations when planning for expansion of NTP training activity. With the development of shorter courses, one-day seminars, and customized training, for example, a need was identified for the Committee to design a numbering system which would allow for that growth.

The Committee recommended and the Conference approved implementation of the foregoing structure in order to allow for the expansion, redesign, and development of NCWM training programs that are responsive to the needs of today's weights and measures officials and their industry associates.

403

I Legislative Strategy

There was extended discussion by the Committee at both the Interim and Annual Meetings regarding the development of proactive strategies for use by weights and measures administrators in dealing with legislators at the local, State, and national levels. The Committee reviewed materials prepared by members Richard Greek and Bruce Martell.

The Committee developed a survey to elicit information regarding individual experiences in dealing with legislatures on such issues as how budgets are defended, etc. The survey was limited to five questions and sent to administrators for their completion and return to Committee member Richard Greek.

Working toward its goal of developing a resource guide for State, local, and regional leaders in weights and measures, the following information has been gathered as of the end of the 80th Annual Meeting:

Question 1. Do you communicate with your legislative body?

<u>Directly</u>		<u>Indirectly</u> i.e., through industry, consumer groups, newsletter	
yes	30	yes	17
seldom	4	seldom	4
on request	20	on request	5
never	0	never	0

Comments Summary: Approaches ranged from prohibition to communicate without prior approval, to addressing a specific request made through regular professional/social contact.

Question 2. If you responded positively to some portion of question 1, with what level(s) of legislative bodies do you communicate?

local	12
State	42
other	7

Comments summary: Contacts varied based on issue.

Question 3. Do you work with industry to support your programs?

yes	ongoing	33
	crisis only	3
seldom		6
never		1

Comments summary: Above includes trade and independent associations; partnerships with industry; industry viewed as customer; industry can lobby legislature to achieve mutual goals.

Question 4. When talking to elected and appointed officials, what communication strategies do you use?

newsletters	7	press release	11
personal visits	36	show & tell	20
telephone	31	other	6

Comments summary: Legislators are invited to visit w&m; Department of Agriculture only permitted to contact legislators; committee hearings; through office of legal affairs; social/political contacts; show and tell but seldom have or make time to visit; consumer information pamphlet; all communication must be approved at executive level; concise briefings delivered honestly, politely, followed with letter of appreciation.

Question 5. What could the Conference develop/provide to assist you?

Strategy for specific issues	6		
Examples:			
Fee implementation	17	General guidelines	11
Laboratory development	16	Generic legislative process information	8
Cost effectiveness	25	Generic budget process information	10
Avoiding program elimination	9	Reference and/or contact person for	
Other (specify)	2	specific issues	12

Comments summary: Information on other State's programs (costs, salaries, structure, etc.); help in setting lab fees for metrology services; comparative data would help; building relationships with industry (they can help); generic approach means little; methods to determine benefits of program; background material on issues such as privatization; methods of passing legislation from other jurisdictions; ways to increase funding for programs, capital equipment, personnel; training seminars/handbook with visuals/documents to help directors understand legislative/budgeting process; central location to pool information.

The States responding to the survey were:

Alabama	Maryland	North Carolina
Alaska	Massachusetts (Barnstable)	North Dakota
Arizona	Massachusetts	Ohio
Arkansas	Michigan	Oklahoma
California	Minnesota	Rhode Island
Colorado	Mississippi	South Carolina
Connecticut	Missouri	South Dakota
Florida	Montana	Tennessee
Georgia	Nebraska	Texas
Illinois	Nevada	Utah
Indiana	New Mexico	Vermont
Iowa	New Hampshire	Virgin Islands
Kansas	New Jersey	Washington
Kentucky	New York (Suffolk County)	Wyoming
Maine	New York	

404

I Weights and Measures Directors' Roundtables

This item is an outgrowth of this Committee's work on Legislative Strategy. A discussion during the 79th Annual Meeting dealt with exploration of ways to deliver information such as: the NCWM NTP Certification program; how to administer and create accountability in the management systems of weights and measures; fostering a certain level of education among State and local leadership about how to interface with the projected national database; addressing industry concerns; or program justification, all were cited as examples.

It was agreed that the regional Roundtables could serve as venues for educational opportunities identified by this Committee. This may be accomplished through facilitated discussion during the regional association meetings, as well as the NCWM Annual and Interim Meetings. At the regional association meetings, the EA&CA Committee member in attendance and NIST staff were identified as critical links to assist and to initiate those related issues on behalf of the Committee.

There was agreement that EA&CA Committee members from each region will work with the individual association chairs to explore the feasibility of arranging for time during the Directors' Roundtables to discuss two items identified by this Committee. Those individuals would then be responsible for bringing the resultant regional information back to the EA&CA Committee. Time permitting, Directors' Roundtables will be planned for the NCWM Annual and Interim meetings.

405 I Public Affairs**405-1 I Industry Relations**

The Committee examined education and training partnership projects with associate members, such as the Food Marketing Institute, International Mass Retailers, and the Pennsylvania Food Merchants Association.

The Associate Membership Committee indicated to the EA&CA that it is open to proposals for use of the funds available for partnerships and it may be possible to renew the scholarship fund. The AMC indicated the EA&CA should make its request for funds through the NCWM Chairman. This request resulted in the 20-\$500 scholarships referenced in Item 402-2 above.

The Committee reviewed three brochures developed by Randy Motz of The Scale People: "So You Want To Buy A Scale?" "A Consumer's Guide To Purchasing Firewood," and "Care and Maintenance Of Your Scale." It was the consensus that these materials should be presented in a tri-fold, marketing communications format in order to be fully effective. The Institute for Weights and Measures (IWM) will rework the scales brochures with a focus on "marketing advantage" and submit drafts, in tri-fold format, for consideration. The Committee agreed to give a free-lance writer the same opportunity relative to the firewood material.

The Committee expressed appreciation to Randy Motz for his efforts and valuable contributions to this project.

The firewood brochure, "How to Avoid Getting Burned When Buying Firewood," has been completed and distributed to the States. The committee is exploring how agencies and organizations may be able to purchase additional copies at the lowest cost.

405-2 I Public Relations

The Committee reviewed and commented upon the incorporation of weights and measures functions in "Agriculture (AG) in the Classroom" submitted by Barbara DeSalvo. It is anticipated that the document will be finalized and that written and electronic copies be mailed to State Directors for inclusion in the individual jurisdiction's AG in the Classroom program, or as a stand-alone weights and measures handout. The Committee acknowledges the need to educate today's young people who will become tomorrow's consumers. The materials are currently written at the fourth grade level and are structured to foster an awareness of weights and measures. For example, it is hoped that young persons going to the grocery store will transmit information to the parents. Classroom lessons may also be passed on to friends, parents, and other relatives.

For the present, work on the "Agriculture (AG) in the Classroom" project has ceased. This has been necessitated by a lack of funding.

Discussion and comments about the NCWM W&M Week 1995 information packets were positive and were followed by general dialogue regarding topics suitable for inclusion in the 1996 W&M Week material. The Committee agreed with the suggestion that "Sharing Information, Delivering Equity" be designated as the theme for Weights and Measures Week, March 1-7, 1996.

405-3 I Marketing Weights and Measures in the United States

James Lee, representative of the public relations firm of Burson-Marsteller, made a presentation to the Committee during the Interim Meeting, relating how his company can assist the Conference by creating an "image driver issues" campaign. The organization represents itself as the largest public relations firm in the world, specializing in, among other areas, perception management and consumer marketing. The company's projects range in scope from setting up one press conference to an ongoing international media undertaking.

Mr. Lee's presentation demonstrated a good comprehension of what weights and measures needs relative to its constituency, and his recognition of the necessity to capitalize creatively on an awareness of the role of weights and

measures in marketplace equity. The company will research methods and means to create a coalition for the Conference and submit a proposal.

Mark Burson of Burson-Marsteller made a presentation during the Open Hearing of the Committee during the Annual Meeting. He stated that the public is unaware of weights and measures and ambivalent to its impact on their daily lives; and that State legislators continue to reduce funding of programs, resulting in staff and service cutbacks in all jurisdictions, compromising enforcement and jeopardizing the concept of a fair marketplace. Mr. Burson demonstrated how to tell the story of weights and measures in a compelling fashion, conveying the relevance of Weights and Measures Officials. The committee is exploring the feasibility of implementing such an awareness campaign.

405-4 I Advertisement of the 80th NCWM 1995 - Portland, Maine

The Committee planned to use the services of a free-lance writer to publicize the 80th NCWM in Portland, to promote media coverage, encourage participation, and create an awareness of the Conference and its impact on the marketplace. The Committee asked each Standing Committee to submit its highest priority items for inclusion in press releases and for circulation to industry and other interested parties. However, budgetary constraints did not allow for use of an independent writer.

These efforts were coordinated with the State of Maine's public affairs office. A press release, designed to focus on the issues to be addressed during the meetings, was prepared by OWM staff and distributed to newspapers, magazines, and periodicals in the northeast, as well as to selected national publications. The Committee plans similar efforts to promote the 81st Annual Meeting in New Orleans, Louisiana, July 21-25, 1996.

406 I Safety Information Clearing House

In conjunction with the NCWM Safety Liaison, the Committee condensed and finalized an Accident/Incident Summary, which appears in Appendix G. It is suggested that this form be placed in the State or local weights and measures or industry reporting system for accessibility and ease in completing and sending to NCWM.

It is anticipated that the safety reporting form will be accessible through the Weights and Measures Information System (WAMIS) bulletin board. The information received will ultimately be made part of the national database under development.

Thus far, there have been two responses to the Committee's request for completion of the Accident/Incident Summary form which appeared in NCWM Publication 16, Program and Committee Reports. The committee will repeat its request for completion and return of the form in an effort use the information from the forms in the development of a Safety Information Clearing House.

M. Gray, Florida, Chairman

B. DeSalvo, Ohio

R. Greek, San Luis Obispo County, California

B. Martell, Vermont

E. Price, Texas

C. Gardner, Suffolk County, New York, Safety Liaison

T. Coleman, J. Mindte, NIST, Technical Advisors

Committee on Education, Administration, and Consumer Affairs

Appendix A
Report of the Program Evaluation Work Group to the
Education, Administration, and Consumer Affairs Committee

Darrell A. Guensler, California, Chairman

Group Members:

Mike Belue, Belue Associates
Bill Corey, American Frozen Foods
Ken Fraley, Oklahoma
Steve Malone, Nebraska
Allan Nelson, Connecticut

Ed Price, Texas
Randy St. John, Pennsylvania Food Merchants Association
Tom Stabler, The Institute for Weights and Measures
Bob Williams, Tennessee

Juana Williams, National Institute of Standards and Technology
(NIST), Technical Advisor
Tom Coleman, (NIST), Technical Advisor

Reference Key
Number

401

Summary

The Program Evaluation Work Group held its inaugural meeting December 12-13, 1994 in Dallas, Texas. The subcommittee established group goals after careful review of the meeting presentations, recurrent historical observations, and the group's discussions in the area of program evaluation. The work group will further define which historical and additional program measurement data should be collected and made available electronically. They will then decide what procedural guidelines to follow in collecting this data (during routine field inspections). Finally, the group will determine which inspection data will be gathered and subsequently used in conjunction with published economic information to provide program cost/benefit and marketplace impact analyses. A pilot study will commence after the selection of one or two weights and measures software programs which offer a customized package that includes all the required product features. All group efforts will culminate in a study to demonstrate the mutual benefits to be gained by a variety of weights and measures jurisdictions given the ability (1) to record, retrieve, and communicate program data and (2) to derive information on program performance and marketplace impact analysis of their activities. The detailed conclusions of the first session of the Program Evaluation Work Group are as follows:

Goals

The group's mission

Provide national uniform performance measures to

- assess program benefits and costs
- assess and optimize program efficiency and effectiveness

The scope of the Program Evaluation Work Group in obtaining these goals is to:

Establish core data

- identify data
- identify uniform measurement procedures
- identify processes for accumulating data and deriving useful measures

Education Committee

Establish procedures to measure program benefits and costs

- State and local
- national
- identify economic sources
- educate weights and measures officials on how to collect and use data/results in their own programs

Establish procedures to evaluate and share information

- methods of analysis
- methods of dissemination (to internal and external users)

Establish criteria for program accreditation

Presentations

Accreditation Requirements for State Metrology Programs by Ken Fraley

The Institute for Weights and Measures Program Evaluation Service by Tom Stabler

Marketplace Evaluations - California Division of Measurement Standards by Darrell Guensler

Online Connecting Point - IntelliMeasure Weights and Measures Software by Chris Lord/Mike Neary

Privatization Work Group Findings by Darrell Guensler

Program Evaluation Work Group Background by Carroll Brickenkamp

Win Wam Package Checking Software - Nover-Engelstein Associates by Geoff Engelstein

Objectives:

- Complete contract process for one or two weights and measures software programs for the pilot study
- Agree on core data and collection procedures for pilot study
- Conduct pilot study
- Meet and analyze pilot study data
- Report conclusions and recommendations to Committee

Background

The NCWM Chairman Jim Truex, at the recommendation of the Privatization Work Group (1992-1994), appointed the Program Evaluation Work Group in April of 1994. The work group will assist the Committee on Education, Administration and Consumer Affairs in establishing a standard core of data to be collected which would provide measures:

- to determine the effectiveness of weights and measures programs
- to determine whether changes in programs or processes were effective
- to share information and data thus enabling jurisdictions to make marketplace and cost/benefit analysis

In its review of recent attempts to privatize weights and measures functions, the group recognized that there was an absence of usable data. The nonuniformity of the available data also thwarted efforts to establish measures needed to justify programs and demonstrate the full scope and merit of weights and measures activities.

Endorsements for program automation were the result of earlier subcommittee studies on future challenges to Weights and Measures and the National Conference on Weights and Measures (NCWM). The Task Force on Planning for the 21st Century (also known as "The Blue Sky Task Force") (1990-1992) recognized the advantages of developing an electronic communication information system and network. This infrastructure would benefit the program areas of education, administration, and in the uniform interpretation of regulations. The task force noted that this communication ability would aid in increasing program effectiveness and impact by avoiding the delays created by papertrails. It would eliminate a large portion of time-consuming standardized administrative tasks involved in the records management of field data. Additionally, and most important, the task force felt that automation would help field inspectors in their documentation of reports. These inspection reports would provide data that could be compared and used to determine program effectiveness and efficiency, to justify program functions, and to demonstrate where to allocate resources.

Data Findings

Only a limited number of evaluations are currently being conducted to determine the efficiency of inspection activities and their impact on the marketplace. When these figures are either not available or comparable, program directors may not possess the tools necessary to demonstrate the benefits of program activities.

NIST will underwrite the further development of a weights and measures software program. Five weights and measures jurisdictions (California, Connecticut, Nebraska, Tennessee, and Texas) have agreed to participate in the pilot study. Proposals are being accepted from computer companies interested in designing a weights and measures software program. Once a firm is chosen, the group will determine the core criteria to be gathered and will establish procedures for collecting this set of data. The Associate Membership on this committee agreed to locate sources of economic data which would later be utilized to extrapolate figures to indicate how programs impacted the marketplace.

Accreditation

Weights and Measures officials are finding today's customers demand a total quality world. In preparation for business in the 21st century, customers recognize the need for accreditation and are beginning to examine all official standards and credentials. The State Metrology Laboratory Program is a real-world example of the accreditation process at work. Each participant voluntarily enters into the process, which entails meeting a minimal set of established standards. In its discussions, the work group noted that there are a number of similarities between the laboratories and inspection programs, such as established procedures and generally accepted guidelines. Virtually all working group members agreed that program accreditation is an important process. The critical element needed is agreement on what constitutes an accepted set of standard data to create a baseline for program performance within each weights and measures activity. The work group felt that once measurement parameters were established the accreditation process would evolve as a natural progression of events and thus could be addressed in the later phase of the group's work.

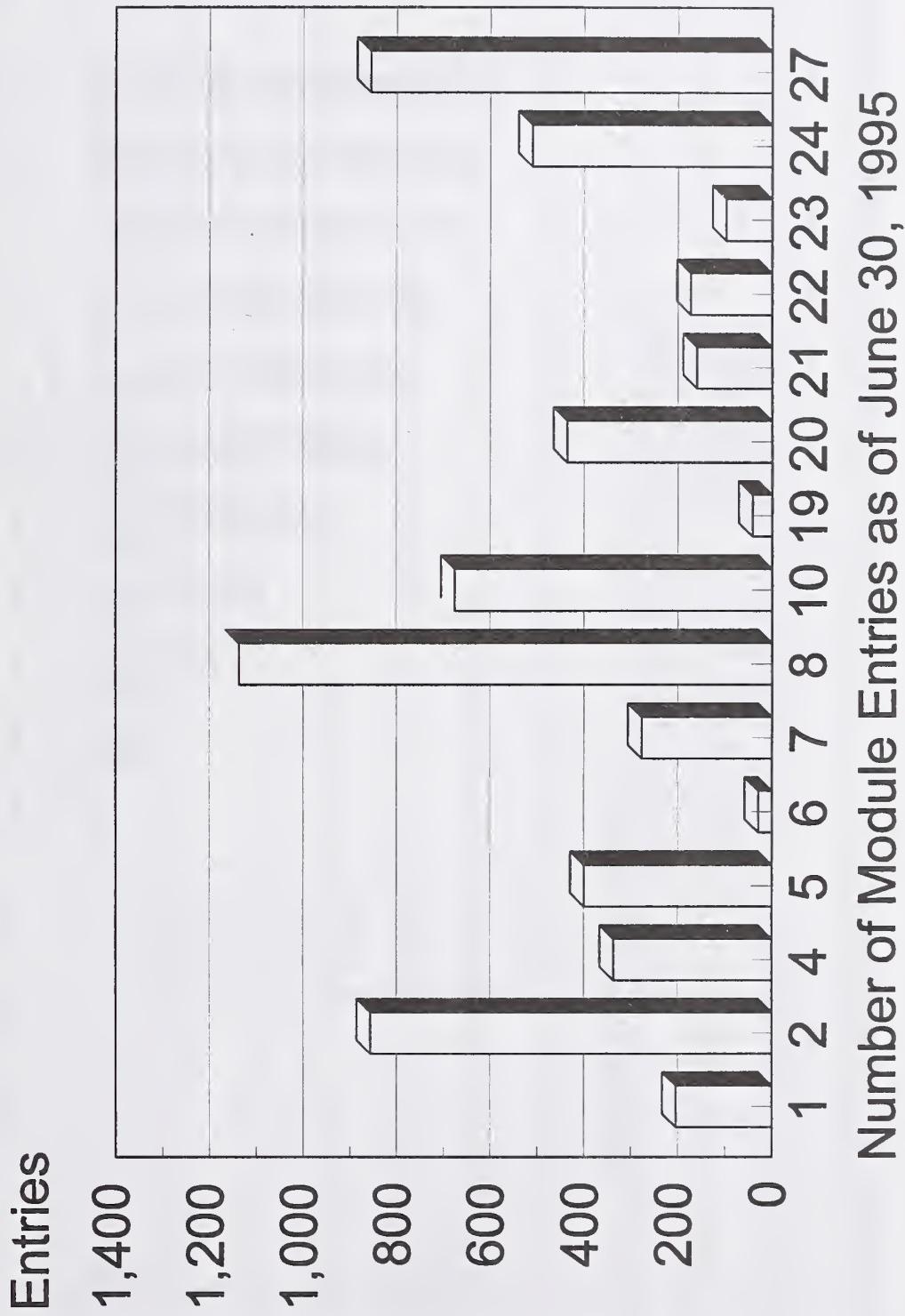
Appendix B
Certification Summary

(As of June 30, 1995)

State	Total No. of Certif.	Total No. of People	Module Number											
			1	2	4	5	6	7	8	10	19	20	21	
AL	43	24		14	12			5	12					
AK	19	10		7		1			10	1				
AZ	28	28		28										
AR	129	42	20	19		10		9	40	12		16	2	
CO	7	7					7							
CT	86	30		19	19	2			20	15	6	3	2	
DE	5	5								5				
DC	4	3							3		1			
FL	99	80	6	8	3	7		2	44	16	6	7		
GA	29	24				8		4	17					
HI	3	3							3					
IA	1	1						1						
ID	8	8							8					
IL	17	17		8		9								
IN	29	29				29								
KS	28	15	7	7		4				1	9			
LA	9	9					8			1				
MD	64	34							27		4	33		
ME	2	2						2						
MI	42	14				9		12				14	7	
MN	15	15							15					
MO	40	39							21	19				
MT	7	7					7							
NE	38	19		2		7		3	15	11				
NV	13	11		1		1		1	9			1		
NH	32	8	6	5	5	2			6			8		
NM	30	20		9					11			10		
NC	39	35							20	19				
ND	3	3							3					
OH	181	83		43	23	32		9	48	15	5	6		
OR	54	18	16	15		5			10	6	1		1	
PA	108	56		26	4	8		7	27	18		18		
PR	91	49		33					33	25				
SD	28	13		7	12				8	1				
TN	40	29				5		6	29					
UT	66	17	16	15		6		4	13	11			1	
VT	23	9	4		2	5		3	8	1	1			
VI	6	6				6								
VA	2	2										2		
WA	21	16		5					15			1		
WI	4	4										4		
Other														
P&S*	42	35				6	13	23						
Totals	1,540	881	75	264	79.00	174	13	113	476	190	19	104	37	

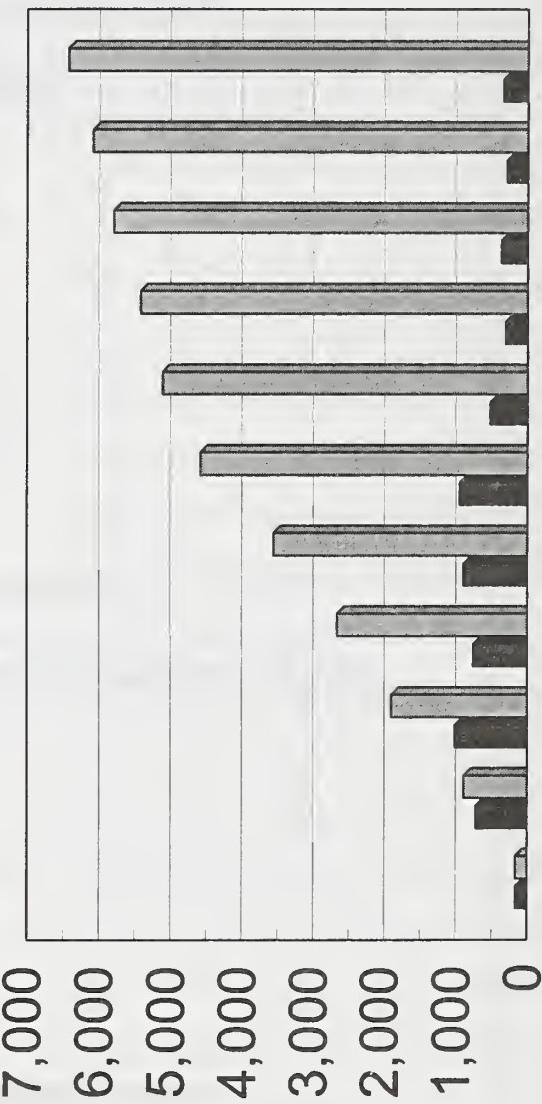
*USDA Grain Inspection/Packers and Stockyards Administration

Entries in NTP Registry By Module



Growth of NTP Registry (Annual and Cumulative Data)

Number of Entries



	Data as of June 30, 1995	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Annual Total	■	168	722	1,017	760	892	953	528	309	373	290	347
Cumulative Total	■	168	890	1,907	2,667	3,559	4,584	5,112	5,421	5,794	6,084	6,431

NATIONAL TRAINING PROGRAM REGISTRY
SUMMARY OF ACTIVITY
(As of June 30, 1995)

Courses Listed in Registry:

- Module 1, Retail Computing Scales - Mechanical
- Module 2, Retail Computing Scales - Electronic
- Module 4, Medium-Capacity Scales
- Module 5, Vehicle and Axle-Load Scales (Version 2: 3/6/92)
- Module 6, Meat Beams and Monorail Scales
- Module 7, Livestock and Animal Scales
- Module 8, Retail Motor-Fuel Dispensers and Consoles
- Module 10, Checking the Net Contents of Packaged Goods

- Module 19, Loading-Rack Meters
- Module 20, Vehicle-Tank Meters
- Module 21, LPG Liquid-Measuring Devices
- Module 22, Commodity Regulations
- Module 23, Introduction to Weights & Measures Regulation in the U.S.
- Module 24, Introduction to NIST Handbook 44
- Module 27, Introduction to Electronic Weighing and Measuring Systems

Individuals Trained - by Module

State	1	2	4	5	5 ¹	6	7	8	10	19	20	21	22	23	24	27	Totals		
AL	15	12	4			4	32										12	26	105
AK	7		1				10	8											26
AZ	51						30	23	17			25	1						147
AR	20	20		10			8	42	42			17	3						145
CA						1													1
CO						11	1	1											13
AK	31	20	2				28	18	12	6		2	26						145
DE		1				5		5			2								13
DC	4	4						3		1									13
FL	13	24	15	13			10	70	39	8	8					43	41	284	
GA			11	8		4	17										7	47	
HI						3	14										4	21	
ID	9		39				10												86
IL	8	1	9			1	23	2				1							45
IN	43	46	42				84					44	2						384
IA				17		5	4						2						28
KS	9	10	14	5		6	18	32								3	8	107	
KY	8	8	1	5			19	16										57	

State	Module Number										Totals					
	1	2	4	5	5 ¹	6	7	8	10	19	20	21	22	23	24	27
LA						8		1			6			4		9
ME	3	11				2	14				33	4	6			340
MD	29					6	28		4							110
MA	23	4	7				16	3	2	31	4	1				103
MI	50	13				19	2	29		22	13					252
MN						1	12		2		2	1				18
MS	2	3				3										8
MO	13					2	40	27				3	62	22		170
MT	5		10			7	6				1					37
NE	17	4	30	8	14	7	24	18			2	15	14	17	27	189
NV	1					1	12				1		11	8		35
NH	6	5	7	3			7				8	2		6		44
NJ	21	21					108			109						431
NM	20					13	19	25			13					90
NY	74						92				9					175
NC		2	2	18	19						16					57
ND						3		3			3					21
OH	74	47	53	4	45	65	56			64	9	12	34	60	90	613
OK		2				5	22							17	2	48
OR	18	17	8				12	16	1	13	16	12		23	16	152
PA	34	96	51	8	8	96	58			25	1	19		27	82	505
PR	32					33	24							38	20	147
RI	1										1					3

**National Training Program Registry
Summary of Activity
(Continued)**

Individuals Trained - by Module																	
State	1	2	4	5	5 ¹	6	7	8	10	19	20	21	22	23	24	27	Totals
SC	25					2	28				1	10					55
SD		7	12			10	8	10									68
TN	27		6			6	32										76
TX	25					8	24				4						66
UT	17	20	12	11		5	17	14			1		3	15		17	132
VT	6		3	9		3	11	1	1		2		2			5	43
VI						6	6						5				23
VA			24	16		5	26	38			25	4		39	7	43	228
WA	13	8		16			16				1	14		12			96
WV						3											3
WI	56	61		19			40	43			26	10			25		345
WY				11			16				10		11		3		51
Other																	
Associate Members						6	10	8			3	1		3			31
FGIS*																	13
1P&S**						2	9	26									3
Total Trained	204	856	337	400	18	29	277	1,137	676	42	436	160	173	98	484	856	6,192
Percentage of Total Certified ²	37%	31%	22%	43%	-	45%	40%	42%	29%	45%	26%	23%	NA	NA	NA	NA	34% ²

* Federal Grain Inspection Service

** Packers and Stockyards Administration

¹Module 5 update of March 6, 1992

²A total of 1,540 certificates have been awarded to 881 individuals under the NTP Certification Program.

**NATIONAL TRAINING PROGRAM REGISTRY
SUMMARY OF METROLOGY SEMINAR ACTIVITY
(As of June 30, 1995)**

Courses Listed in the Registry:

- No. 201, Basic Metrology I
- No. 202, Basic Metrology II
- No. 203, Intermediate Metrology
- No. 204, Advanced Metrology

State	Individuals Trained by Metrology Course				Totals
	201	202	203	204	
AL		1			1
AK	1	1	1		3
AZ	3	3	2		8
CO	2	2	1		5
CT			1		1
DE	1	1	1		3
FL	4	4			8
GA	1	1			2
HI	2	2			4
ID	1	1	1		3
IL	3	3	1		7
IN	1	1	2		4
IA	1	1	1		3
KS	2	1	2	1	7
KY	2	2			4
ME	2	2	1		5
MD	6	6	8		20
MA	1	1			2
MI	1	1	2		4
MN			1		1
MS	2	2	3		7
MO	1	1	1		3
NE			2		2
NV	1	1			2
NH	1	1	1		3
NJ			1		1
NY	2	2	2		6
NC	7	7	3		17

Individuals Trained by Metrology Course					
State	Metrology Course No.				Totals
	201	202	203	204	
ND	2	2	2		6
OH	2	2	1		5
OK			1	1	2
OR	1	1			2
PA	1	1	2		4
PR	2	2	5		9
RI	1	3			4
SC	1	1			2
SD	1	1			2
TN	3	3	1		7
TX	3	3	1		7
VT			1		1
VA	3	3	3		9
WV	2	2	1		5
WI			2		2
Other					
NCWM	29		10		39
P&S	1				1
Canada			2		2
Totals	100	73	70	2	245

**Continuing Education Units (CEU's) Awarded
By the National Conference on Weights and Measures
(As of June 30, 1995)**

Module Number	CEU's	No. of Participants	1985 Total	1986 Total	1987 Total	1988 Total	1989 Total	1990 Total	1991 Total	1992 Total	1993 Total	1994 Total	1995 Total	Grand Total
1	3.1	204	306.90	77.50	117.80	99.20	24.80	3.10	3.10	3.10	3.10	3.10	3.10	632.40
2	3.1**	856	65.10	857.90	759.50	173.60	244.90	31.00	297.60	3.10	12.40	127.10	2,572.20	
4	3.1	337			492.90	198.40	170.50	145.70					37.20	1,044.70
5	3.1	400			96.10	133.30	381.30	217.00	220.10	18.60	52.70	55.80	65.10	1,240.00
6	3.1	29			12.40		55.80		15.50	6.20				89.90
7	3.1	277			12.40		248.00	117.80	80.60	80.60	130.20	43.40	145.70	858.70
8	2.8	1,137			288.40	856.80	260.40	739.20	324.80	112.00	156.80	252.00	50.40	142.80
10	2.8	676	75.60	372.40	302.40	128.80	417.20	120.40	148.40	123.20	177.20	27.70		1,893.30
19	3.5	42						59.50	49.00	38.50				147.00
20	2.8	436			156.80	109.20	109.20	338.80	92.40		254.80	159.60		1,220.80
21	3.5	160			105.00	129.50	147.00	52.50	31.50		42.00	52.50		560.00
22	2.45	173						230.30	191.10	2.45				423.85
23	1.00	98								57.00	36.00	5.00		98.00
24	1.5	511						15.00	402.00	156.00	34.50	84.00	31.50	766.50
27	1.1	856	155.10	402.60	165.00	66.00	36.30	22.0		24.20	53.90	16.50		941.60
Totals		6,192	230.70	1,435.40	2,642.30	2,197.40	2,564.40	2,381.10	1,257.80	795.05	811.90	633.50	714.00	15,672.55

**One Module 2 class with 74 participants was given only 2.00 CEU's.

* One CEU is equivalent to 10 contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction.

**Continuing Education Units (CEUs) Awarded
By the National Conference on Weights and Measures
For Attendance at OWM Metrology Seminars
(June 30, 1995)**

Course No.*	No. of CEUs*	Participants	1990 Total	1991 Total	1992 Total	1993 Total	1994 Total**	1995 Total	Grand Totals
201	3.60	100	97.20	54.00	7.20	28.80		172.80	360.00
202	3.50	73	101.50	52.50	14.00	28.00		59.50	255.50
203	3.10	70	49.60	40.30	34.60	6.20		83.70	217.40
204	2.50	2				5.00			5.00
Totals		245	248.30	146.80	58.80	68.00		316.00	837.90

Course No. 201: **Basic Metrology I**

Course No. 202: **Basic Metrology II**

Course No. 203: **Intermediate Metrology**

Course No. 204: **Advanced Metrology**

- * One CEU is equivalent to 10 contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction.

**Classes conducted during 1994 were not submitted to the Registry while awaiting completion of participant assignments.

Appendix D

Training Questionnaire Summary (Surveys Sent to State Directors - October 18, 1994)

Number of Surveys Sent: 55

1. Please indicate your State or territory. Number of Surveys Received: 53 (96%)
(American Samoa and Guam did not respond)
2. Do you have any ongoing training programs or are you in the process of planning training for weights and measures staff?

YES N=43 NO N=10

- a. Who will participate in this training?

Weights and Measures Field Staff	N=41
Weights and Measures Administrative Staff	N=24
Industry	N=16

Others:

Local Sealers of Weights & Measures	N= 4
Other States (space permitting)	N= 3

- b. Please indicate what type of training you will offer, who will conduct the training, and on what dates?

Response: 35 States plan training classes as follow:

<u>Course</u>	<u>Number of Classes</u>
Module 2	5
Module 4	2
Module 5	8
Module 6	1
Module 7	1
Module 8	8
Module 10	6
Handbook 133	10
Module 19	1
Module 20	4
Module 24	1
Module 27	1
Belt Conveyor	1
General Weights & Measures	15
Handbook 44	8

3. Please indicate the training materials/equipment your office provides to staff.

Field Standards N=43

Laws & Regulations N=47

Handbooks/EPO N=47

Others: NCWM manuals, NTP modules (N= 7), NCWM Publication 5, IWM manuals and courses, policy and procedural manuals, local enforcement guides, scales, calculators (with standard deviation), meeting rooms, audiovisual equipment (including: VCR, overhead, slide projector).

4. Does your program provide weights and measures training to other weights and measures jurisdictions or related industries (e.g. local weights and measures jurisdictions; device service agencies)?

YES N=28

NO N=21

If yes, to whom do you provide training?

30 States indicate training is provided to 12 other States, 15 local weights & measures jurisdictions, and 17 industry personnel.

5. Would your office be interested in listing its training events on a training calendar?

YES N=34

NO N= 14

Appendix E
Allocation of Associate Membership Training Scholarships

State	Region	No. of Schol. re-requested	No. of Schol. allocated	Type of training	Use	Status
NC	S	1	1	Changes to H-133	Student expenses	Completed 10/94
AZ	W	2	1	Motor-fuel dispensers or checking the net contents of packages	Trainer expenses	Completed 12/94
ND	C	1	1	Heavy capacity vehicle scales	Trainer expenses	Completed 7/95
OH	C	2	2	Checking the net contents of packages	Student expenses	Completed 7/95
AK	W	3	2	Checking the net contents of packages	Trainer & student expenses	Completed 11/94
VT	NE	1	1	Vehicle scales	Student expenses	Completed 5/95
MT	W	3	2	Vehicle scales	Trainer expenses	Completed 12/94
FL	S	1	1	Changes to H-133	Student expenses	Completed 11/94
NH	NE	1	1	Vehicle scales	Student expenses	Completed 5/95
ME	NE	1	1	Vehicle scales	Student expenses	Completed 7/95
WV	S	5	1	Changes to H-133	Student expenses	Completed 11/94
MA	NE	1	1	Vehicle scales	Student expenses	Completed 5/95
MS	S	3	2	Changes to H-133	Student expenses	Completed 5/94
NM	W	4	2	Computing scales	Student & trainer expenses	Completed 3/95
PA	NE	1	1	Regional seminars on various topics	Meeting room and materials expenses	Completed 6/95
MN	C	1	1	Vehicle scales	Student & trainer expenses	Completed 7/95
CA	W	6	1	H-133 training	Trainer & materials expenses	Completed 5/95
Totals:		17	37	22 S-05 W-08 C-04 NE-05		

Appendix F

PROPOSAL TO WWMA STANDING COMMITTEE

Committee: Education, Administration, and Consumer Affairs.

REGIONAL ASSOCIATION: WESTERN

DATE: 8/30/93

PRIORITY LEVEL: (High) 1 2 3 4 5 (Low)

CONTACT PERSON: James Ross TELEPHONE: 503-378-3792
503 986-4672

JURISDICTION: Oregon Department of Agriculture Measurement Standards Division.

PROPOSAL: Use some of the training funds from NCWM to develop a home study course which would allow Inspectors to earn CEU's for successful completion of NCWM training modules by mail or electronically via computer with E-mail or other office connection.

JUSTIFICATION: Oregon has 14 inspectors of which only one is located in the Salem office area. The other 13 inspectors are located throughout the state. The expense involved in putting on a NCWM Module - travel per diem etc. is too great, especially in these lean times, to have more than one training module per year for the staff. Some travel restrictions do not allow time for classroom style training. New inspectors (and some of the more experienced ones) would like the opportunity to earn CEU's and obtain certification on various NCWM Modules.

REASONS FOR:

1. Modern electronic communication allows for quick response to remote areas via telephone, FAX, or computer E-mail via modem. Quizzes, tests, or even scanned images can be sent over the phone line.
2. Most homes contain at least one VCR which would allow home study courses to be put on video tape VHS format.
3. Inspectors could advance at their own pace, experience, and skill level.
4. This would revive the NCWM Module Training Program in Oregon which started out strong, but has deteriorated due to budget cuts and travel restrictions.
5. Inspectors should have the opportunity for education in their field.

REASONS AGAINST:

1. Time and cost involved in setting up a home study style course.
2. Equitable means of monitoring participation to insure course completion and that CEU's are earned.

Appendix G

Incident/Accident Summary

(To be completed & submitted unsigned, anonymously)

The purpose of this form is accident prevention. Please incorporate this anonymous summary into your safety program documentation procedures. Completing this brief report will allow NCWM to alert other organizations and jurisdictions of hazards and possible corrective actions.

1. What weights & measures function was the employee performing, where, and when?

2. Briefly describe the incident.

3. Contributing factors (check all that are appropriate):

- | | | |
|---|---|--|
| <input type="checkbox"/> inexperience | <input type="checkbox"/> weather conditions | <input type="checkbox"/> improper equipment |
| <input type="checkbox"/> lack of training | <input type="checkbox"/> equipment failure | <input type="checkbox"/> lack of protective gear |
| <input type="checkbox"/> employee error | <input type="checkbox"/> failure to follow procedures | <input type="checkbox"/> hazardous materials |
| <input type="checkbox"/> insufficient personnel | <input type="checkbox"/> job fatigue | <input type="checkbox"/> unsafe work surface |
| <input type="checkbox"/> haste | <input type="checkbox"/> environmental conditions | <input type="checkbox"/> housekeeping |
| | <input type="checkbox"/> other | |

Comments:

4. Recommendations for corrective action:

You may continue your comments on the following page.

Please mail completed form to: Tom Coleman, NCWM, Post Office Box 4025, Gaithersburg, MD 20855 (telephone: 301-975-4868)



Continuation of Comments on Numbered Items

1.

2.

3.

4.

Miscellaneous remarks:

The NCWM Committee on Education, Administration, and Consumer Affairs greatly appreciates your making the effort to complete and return this information for inclusion in the planned Safety Information Clearing-house.

Metrology Report

The 1995 NCWM Metrology meeting included reports from all of the regional metrology groups which met during the past year. A status report of the current metrology projects was presented, followed by a discussion of priority work projects and their completion strategies. A presentation on the draft template quality manual was presented. Mike Dynia (CT) gave a presentation on the draft SOP for advance weighing designs and Jim Akey (WI) presented the draft SOP for the UMT6 balance and a 50 lb cast iron weight survey. A demonstration on accessing the NIST bulletin was given by L.F. Eason (NC). Al Tholen, Chief of NVLAP, gave a presentation on NVLAP and OWM History and the current accreditation process.

Two optional evening work sessions were held. The status of the NIST HB 105 series and a talk by Ken Fraley (OK) on the requirements for advance mass measurements were presented during the first session. The second session focussed on grain moisture issues.

Two additional meeting were held to address State laboratory accreditation issues and the metrology meeting structure within the NCWM.

Regional Group Reports

NEMAP: Mike Dynia (CT)

Last meeting: September 19 - September 23, 1994.

The NEMAP 1994 annual meeting was hosted by Ron Balaze, in Lansing, Michigan. There were 26 participants at the meeting.

Current round robins:

- 1) one 100-g weight kit; and
- 2) one 5-gal test measure.

The current round robins are being coordinated by Randall Crosser(Ohaus), Michael Dynia (CT), Ray Cioffi(VT), Ron Balaze (MI), Pete Millivan (PA), and Georgia Harris, NIST.

1994 Topics:

- Round robin analysis: Mike Dynia (CT) and Ray Cioffi (VT) 5-gal measure; Ron Balaze (MI) 100-g weight kit; Peter Millivan (PA) 50-lb weight
- Georgia Harris (NIST): Control Charts; Uncertainties (Application of ISO Guide to the Expression of Uncertainty in Measurements); Quality Manuals; NVLAP Applications; Software (quality assurance, verification and validation, formatting, documentation, spreadsheet application); Laboratory Accreditation (Handbook 143 update, NVLAP Accreditation and NIST Handbook 150, new checklists and requirements); Measurement Control; and Mass Measurements (error analysis, sources of variation such as magnetism, temperature effects, automated data acquisition, mass code updates, surveillance testing)

Tours: The group toured the Michigan metrology laboratory.

Next meeting: The next NEMAP meeting will be hosted by David Baird, of the Delaware Department of Agriculture, in Dover. The dates will be September 25 - 29, 1995.

MIDMAP/SWAP: Jim Akey (WI) / Ken Fraley (OK)

Last Meeting: October 10 - 14, 1994

The MidMap/SWAP annual meeting was held at the Embassy Suites in Kansas City, Missouri. Thirty three attended this first joint meeting of the MidMap and SWAP metrology groups. We wish to extend our thanks for the great job that was done by Missouri and Kansas in handling the arrangements and hosting the meeting.

Metrology Report

Current round robins (MIDMAP):

- 1) Precision 100 g - 1 mg class 1 weight kit;
- 2) Set of four 25 lb cast, class F weights; and
- 3) 100-gal refined fuel prover.

The current MIDMAP round robins are being coordinated by Jim Akey (WI) and Carol Hockert (MN) #1; Mike Rockford #2; and Steve McGuire (IL) #3. The coordinators are to be commended on a good job as all the round robin activities are currently on or ahead of schedule. The 100-gal refined fuel prover round robin is predicted to run over two years and will include several locations in addition to MidMap members.

Current round robins (SWAP):

- 1) 100 g - 1 mg weight kit;
- 2) Two 1 kg weight kits;
- 3) Precision calibration of oz weights; and
- 4) Aluminum, brass and stainless steel weights to study temperature effects.

1994 Topics:

- Georgia Harris (NIST): Control Charts; Uncertainties (Application of ISO Guide to the Expression of Uncertainty in Measurements); NVLAP Applications; Software (quality assurance, verification and validation, formatting, documentation, spreadsheet application); Laboratory Accreditation (Handbook 143 update, NVLAP Accreditation and NIST Handbook 150, new checklists and requirements); Measurement Control; and Mass Measurements (error analysis, automated data acquisition, mass code updates, surveillance testing);
- G. Diane Lee (NIST): Quality manual overview;
- Steve McGuire (IL): Assessment of State Laboratories;
- Mass Measurements and Round Robin Analysis(error analysis, sources of variation such as magnetism and temperature effects, mass code updates, surveillance testing):
 - Ken Fraley - 1 kg Aluminum vs Stainless Steel;
 - David Dikken - 21 pc metric 100 g set; magnetism and gravity;
 - Karl Herken - Experimental Design;
 - Herb Eskew and Ken Fraley - Temperature;
 - 31 lb weight kit round robin data;
 - Randy Burns - Grain Moisture (rice and wheat); and
 - Jim Akey - 50 lb cast iron weight survey.
- Karl Herken (KS): Software Verification;
- Dr. Walter Kupper (Mettler-Toledo, Inc.): Validation of High Accuracy Weighing Equipment;
- Mark Picknell (Rice Lake Weighing Systems): RS 232 Communications

Tours: The group toured the FGIS (GIPSA) facility and Fairbanks scale museum display at the Fairbanks Scale Corporate offices.

Next Meeting (MIDMAP): The next meeting will be hosted by Dick Weber of 3-M corporate metrology in St Paul, Minnesota, October 23 - 27, 1995

Next Meeting (SWAP): The next meeting will be hosted by Richard Schulmeister of the New Mexico Department of Agriculture, in Las Cruces, New Mexico, October 2 - 6, 1995.

CaMAP: José Torres Ferrer (PR)

Last meeting: February 6 - 9, 1995.

The last meeting held at the University of Puerto Rico in Mayaguez, PR, was coordinated by José Torres Ferrer. The 1995 participants included the government laboratories of Puerto Rico, U.S. Virgin Islands, Trinidad-Tobago, St. Lucia and Arizona; industry participants were from Process Instrument Services, Advance Instrument Sales and Service,

National Standards of Puerto Rico, Troemner, and JTI Systems, Incorporated. An NCSL meeting was held on Friday after the meeting.

Current round robins:

- 1) one 1-kg, one 500-g, and two 200-g standards; continuation of mass round robin

Topics:

- Archie Corbitt (U. S. VI): Weights and Measures in the United States;
- Jerry Everhart (JTI): Process Measurement Assurance Workshop;
- Georgia Harris (NIST): Legal Metrology in the United States, NIST HB 145, SOP 19, and 21 and videos on volume measurements, cleaning and handling weights, facility requirements for mass measurements, environmental effects on calibration, and Round robins;
- Jose Torres Ferrer (PR): Module 8 Liquid Measuring Devices, EPO No. 21, and video on retail motor fuel dispensers;
- Lloyd Francis (Troemner): Overview of weight manufacturing at Troemner and slide presentation of their new mass metrology laboratory.

José Torres Ferrer provided Spanish translation and facilitated discussion for those topics presented in English. Bilingual presentations were given on all topics.

Next meeting: The next meeting will be a national meeting tentatively scheduled for San Antonio, TX, October 1996.

SEMAP: L. F. Eason (NC)

Last meeting: April 23 - 27, 1995.

The meeting was hosted and held at the North Carolina Standards Laboratory in Raleigh, North Carolina. All states and several industries were represented at the meeting.

Current round robins:

- 1) Two 1-lb standards for precision comparison of avoirdupois standards

1995 Topics:

- Barry Smith (FL): Round robin update and discussion;
- Dick Kershaw (Vaisala, Inc.): Relative humidity measurement concerns;
- Martin Coile (GA): NVLAP audit experience;
- L.F. Eason (NC): Safety-personal protective equipment in the metrology laboratory;
- Karen Bryan (NC): Rigid rule SOP revision;
- Cheryl Tew (NC): NCWM grain moisture task force report;
- G. Diane Lee (NIST): Draft template quality manual;
- Chip Riedeburg (NCDA safety officer): Lifting safety;
- Georgia Harris (NIST): User operated mass calibration package demonstration;
- Brian Fritzpatrick (Hi-Tech Inc.): Environmental measurement package;
- Jeff Dierker (Lakeshore Measurement and Control Technologies): Weight magnetism;
- Ken Fraley (OK): Environmental parameter round robin; and
- Steve Barry (MD)/Milt Hargrave (VA): Weight cart testing and design considerations.

Tours: The group toured the North Carolina metrology laboratory, the world headquarters of the Underwriters Laboratories and Glaxo Wellcome, Ltd.

Next meeting: A tentative time and place for SEMAP was set for April 21 - 25 or April 24 - 29, 1996 in Jackson, Mississippi. The group expressed concerns with attendance at the national meeting in San Antonio, TX in October 1996.

Metrology Report

WRAP: Joe Rothleder (CA)
Last meeting: May 16 - 18, 1995.

The 1995 WRAP meeting was hosted by Victor Gerber of the Wyoming Department of Agriculture, metrology laboratory in Cheyenne. Nevada and Hawaii did not attend the meeting. All other States and Los Angeles County were represented.

Current round robins:

- 1) Aluminum 1 kg weight; and
- 2) Stainless Steel 1 kg weight.

1994 Topics:

- Kelly Moody (AZ): Surveillance testing and round robins, Avoirdupois primary standard measurement control, and NVLAP assessments;
- Matthew Crandall (AZ): Round robin analysis;
- Joe Rothleder (CA): Statistics and historical data for establishing calibration intervals; and
- G. Diane Lee (NIST): Quality manual presentation, Youden plots and E_{normal} values.

Tours: The group toured the F. E. Warren Air Force Base metrology laboratory in Wyoming.

Next meeting: The next meeting will be a national meeting, tentatively scheduled for San Antonio, TX, October 1996.

Work Project Status and Development

A Status report of current metrology projects was presented, followed by a discussion of priority work projects and completion strategies. The status report was based on responses to a survey sent to State metrology laboratories. The survey requested prioritization of NCWM work projects. The survey responses were used to rate the top five selected projects (See below).

1st Highest Selection 6 - responses	2nd Highest Selections 5 - responses each	3rd Highest Selections 4 - responses each	4th Highest Selection 2 - responses	5th Highest Selection 1 - response each
Calibration Interval Guide	Update HB 130	Weights and Measures Accreditation Program	SOP for TN 952 Procedures	Small Volume Provers
	Software Verification	Use of Electronic Balances		EPO for Gravimetric Testing of Motor Oil Meters
		Review Training Modules		Testing of Levels for Provers
		NCWM Adoption of HB 105-Series		
		Balance Service Brochure W/ one x response		
		SOP for Use of Sensitivity Weight on Electronic Balances		

The status of Draft SOP's and other projects which ranked in the top five selected by State metrology laboratories are addressed below:

- *Draft SOP For The UMT6 Balance.* Jim Akey (WI) presented the draft SOP for the UMT6 balance. The SOP addresses special items to consider prior to purchase of the balance, set-up, configuration and operation. Comments and suggestions will assist in completion of the final publication and should be forwarded to Jim Akey (WI) phone: 608/267-3510 or facsimile: 608/266-1560.
- *Draft SOP For Advance Mass Measurements.* Mike Dynia (CT) presented the draft SOP for advanced mass measurements. This SOP is in the preliminary stages of development, and contains sections on calculations and statistics. Metrologists interested in assisting with the completion of the draft should contact Mike Dynia (CT) at 203/566-5230.
- *Software verification.* Two committees in NCSL are working on developing a recommended practice for verification and validation of software in the metrology laboratory.
- *SOP for use of sensitivity weight on electronic balances.* This SOP was discussed at the advanced metrology seminar in June, 1995 and should be included in the SOP for Advanced Weighing Designs (TN 952) currently being drafted by Mike Dynia.
- *Implement changes necessary to incorporate small volume provers into field practices* - Brooks Instruments developed a draft of NIST HB 105-7 and it was circulated for comments. Only two responses were received.
- *Weights and Measures accreditation program.* Presentations were given at the Program Evaluation Working Group meetings in Maryland, September 1994, (Diane Lee) and in Dallas, December, 1994 (Ken Fraley) which addressed the steps taken to implement an accreditation program for the State laboratories and how it could be applied to the weights and measures program. The group will be working to establish measurement parameters after which an accreditation program could develop. (See page 222 in NCWM Pub 16)
- *Handbook 105-Series Status.* There are seven series of NIST handbooks for specifications and tolerances for field standards under revision, circulating for comments and/or waiting for review. They are as follows:
 - 105-1 Field Standard Test Weights;
 - 105-2 Field Standard Glass Flask;
 - 105-3 Field Standard Test Measures and Provers;
 - 105-4 Field Standard LPG Provers;
 - 105-5 Field Standard Timing Devices;
 - 105-6 Field Standard Temperature Devices;
 - 105-7 Field Standard Small Volume Provers.

HB 105-1 was revised most recently, in 1990. A file has been started, to collect comments and suggestions for revisions. HB 105-2 is completed and awaiting technical review. HB 105-3 to 105-7 are being circulated for comments. Metrologists interested in revisions to HB 105-1 or review of other 105-series should contact NIST, OWM, if they have not received drafts for their comment.

Priority projects for the State Laboratory Program are the development of administrative procedures necessary to meet the requirements of NIST HB 143 and recommendations to the Laws and Regulations Committee for updating NIST HB 130 to include NIST accreditation issues.

Volunteers for completion of work projects are needed to chair and actively participate in the development of the projects. Goals and deadlines need be set, a plan developed and tasks distributed to project members. Any metrologist interested in working on these projects should contact NIST, OWM.

NCWM Metrology Meeting Topics

Draft Template Quality Manual. The draft quality manual is available on the NIST bulletin board 301/ 869-1665. The quality manual was presented at the metrology meeting and each participant received a copy of the manual.

Metrology Report

The manual has been presented at the SEMAP and WRAP regional meetings and will be presented at all other regional meetings. States are encouraged to adopt the manual, which complies with the requirements of NIST HB 143. Comments or suggestions on the draft will assist with completion of the final publication and should be submitted to NIST, OWM.

NVLAP Accreditation. Al Tholen, Chief of NVLAP, gave a presentation on NVLAP and OWM History and the NVLAP accreditation process. The presentation was followed by a question and answer period.

Accessing The NIST, OWM Bulletin Board Demonstration. A successful demonstration on accessing the NIST bulletin, was given by L.F. Eason (NC). The demonstration provided step by step instructions on how to access the bulletin board from the DOS operating system or using RIPscrip graphics. RIPscrip graphics were also used to demonstrate how to download files from the bulletin board.

NISTIR 5672, Advanced Mass Calibration and Measurement Assurance Program for State Calibration Laboratories. Ken Fraley (OK), one of the authors of NISTIR 5672, presented the publication to the metrology meeting participants. This publication addresses guidelines for evaluating advance mass calibrations and can be used to evaluate laboratories requesting accreditation at this level.

Grain Moisture Issues. Representatives from the Grain Inspection, Packers and Stockyards Administration (GIPSA, formerly FGIS), NIST, NTEP grain moisture meter sector members and metrologists participated in an open discussion at the NCWM annual meeting in Portland. The discussion addressed issues associated with State participation in on-going round robins for phase II of the NTEP program for grain moisture meters and State grain moisture program direction.

State laboratories with grain moisture programs will be requested to participate in on-going round robins with manufacturers, and the GIPSA, NTEP laboratory.

Calibrations for NTEP devices are based on the NTEP laboratory air oven results. Field testing of NTEP moisture meters for accuracy are conducted by State laboratories based on State air oven moisture results. Differences in moisture results between the NTEP laboratory and the States could cause problems with field inspection of the NTEP devices. The effectiveness of the program depends on the agreement between State and NTEP laboratory air oven results. The round robins will provide evidence of the agreement between states and the NTEP laboratory.

Additionally, States will also be requested to collect and submit results for different meter models using the same sample. This will provide evidence of program effectiveness in promoting uniformity between one meter model to another.

Grain moisture program direction for State laboratories was discussed. The issues included uniformity of test procedures and training.

New Structure For The Metrology Meetings At The NCWM. The Executive Committee, State metrologists and a number of State directors met to discuss policy issues concerning accreditation of State laboratories and NVLAP. A meeting with Executive Secretary, Gil Ugiansky, Chairman, Jim Truex and State metrologists was held to address how the metrology meetings could be structured within the NCWM. A formal structure within the NCWM would involve the Conference on laboratory policy issues affecting the State laboratories and Weights and Measures programs.

L.F. Eason (NC) addressed the Conference on this issue and will draft a proposal of how this can be accomplished. The proposal will be circulated to all states for comments. Directors and metrologists are encouraged to review the proposal and address any concerns they have on policy issues affecting their State laboratories. State concerns will be included in the proposal and presented to the Executive Committee at the Interim meeting in January 1996.

Mass Change of 50 lb cast iron weights. Jim Akey (WI) gave a presentation on data regarding the instability of 50-lb cast iron test weights maintained in the laboratory. Two 50 lb weights from Rice Lake Weighing Systems were checked on a Mettler PK60MC over a 2 year period to determine mass change. A 50 lb working standard was used to zero the display before each comparison. The weights were received at the Wisconsin Metrology Laboratory in January 1993 and were stamped LAB-1 and LAB-2. The original seals and paint are still intact. They were stored in a closed cabinet and covered with cloth to prevent any dust settling on the weights. The LAB-1 weight started at 0.87 g, and at present is 1.57 g. The LAB-2 weight started at 0.92 g, and at present is 1.53 g. The concern has been that adjusting weights $\frac{1}{3}$ to $\frac{1}{2}$ above the tolerance when new may cause the weights to be out of tolerance on the plus side within a 2 year

period. The effects of humidity on the weights were reviewed in the study and may be a contributing factor to the increase in mass. Jim Akey is requesting feedback and/or additional testing by metrologists in this area.

NCWM Metrology Meeting Participants

G. Diane Lee - NIST, OWM

Joe Rothleider - California

L.F. Eason - North Carolina

Herb Eskew - Texas

Jose' Torres Ferrer - Puerto Rico

Dan Newcombe - Maine

Ken Fraley - Oklahoma

Michael Dynia - Connecticut

Jim Akey - Wisconsin

Ron Balaze - Michigan

Dick Weber - 3M Corporation

Paul Hadyka - USDA-GIPSA

Jim Lovell - Alaska

Runsheng Dai - China

Ruojiang Zhao - China

Ed Szesnat - New York

Jack Barber - Dickey-John

Richard Pierce - USDA-GIPSA

Don Onwiler - Nebraska

Cliff Watson - Stein Labs, Perstorp Analytical, Foss Foods

Kerry Elkins - Roadway Information Technology

David Harkleroad - Tennessee

David F. Rogers - Lockheed Martin Marietta

Walter Kupper

Report of the Resolutions Committee

Bruce Martell, Chairman
Chief, Consumer Assurance Division
Vermont Department of Agriculture

Reference
Key No.

700

GENERAL

The Resolutions Committee wishes to express the appreciation of the members of the National Conference on Weights and Measures to those who contributed their time and talents toward the arrangements for the conduct and success of this 80th Annual Meeting. Special votes of thanks are extended:

- (1) to Edward J. McLaughlin, Commissioner of the Maine Department of Agriculture, for his welcoming remarks during which he indicated his support of the work of the Conference, and all of weights and measures;
- (2) to the Maine Department of Agriculture, Division of Regulations, particularly Director Clayton F. Davis and his staff for the hospitality extended to the Conference and assistance in preparation for and conduct of the 80th Annual Meeting;
- (3) to Sergeants at Arms, Conrad Brown and Howard Prince, Maine Department of Agriculture, Division of Regulations;
- (4) to Ray Kammer, Deputy Director of the National Institute of Standards Technology (NIST), for his remarks to the membership indicating continuation of the NIST partnership with NCWM;
- (5) to James C. Truex, Chairman, and the officers and appointed officials of the National Conference on Weights and Measures for their assistance and service toward progress on national issues;
- (6) to committee members for their efforts throughout the past year preparing and presenting their reports; to the subcommittees and work groups for their discerning and appropriate recommendations;
- (7) to regulatory officials of State and local jurisdictions for the advice, interest, and support of weights and measures administration in the United States;
- (8) to representatives of business and industry for their cooperation and assistance in committee and Conference work, most especially the continuing support as demonstrated by the granting of scholarships for training; to the associate membership organization for the hospitality exhibited in sponsored social functions; particularly William J. Corey, Jr., Secretary, American Frozen Foods, for arranging the outstanding excursion to Peak's Island for the enjoyment of Conference members and their guests;
- (9) to the staff of the Holiday Inn by the Bay for their assistance and courtesies, all of which contributed to the enjoyment and comfort of the delegates within their facilities; and

- (10) to the National Institute of Standards and Technology and its Office of Weights and Measures for their dedicated assistance in planning and conducting the work and program of the National Conference on Weights and Measures, especially to Ann Turner, Elizabeth Loveless, Michele Krebs, and Lynn Sebring for their professional and hospitable conduct of the administrative operations of the meeting; to Dr. Gil Ugiansky for his participation and for his anticipated support.

On this occasion of the 80th Annual Meeting of the National Conference on Weights and Measures, the committee wishes to recognize and express its appreciation to the following individuals:

- (1) to Dr. Carroll S. Brickenkamp, past Executive Secretary of the NCWM and past Technical Advisor to the Laws and Regulations Committee and former Chief of the Office of Weights and Measures, for her vision for the future of the weights and measures community and for her unflagging efforts to promote NCWM as the leadership organization in weights and measures issues; to Dr. Brickenkamp for her management and guidance to the NCWM Executive and Laws and Regulations Committees; and finally, to Dr. Brickenkamp for her willingness to share her valuable time to assist all weights and measures officials and listen to their concerns;
- (2) to Walter G. Leight, Deputy Director, NIST Office of Standards Services, for his many years of invaluable assistance and editorial support essential in the publication of NIST Handbooks 44, 130, and 133, as well as Conference documents;
- (3) to Henry V. Oppermann, past Technical Advisor to the NCWM Specifications and Tolerances Committee and former Deputy Chief of the Office of Weights and Measures for his in-depth expertise and tireless efforts in serving the Conference; to Mr. Oppermann for using his technical skills in writing and publishing NIST Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices;" and
- (4) to Louis E. Straub, Chief of Weights and Measures, Maryland Department of Agriculture, and his fine staff for the generous provision of the classrooms, laboratories, excellent demonstrations, and all courtesies extended, without which the success of the NIST Handbook 133 Instructor Training classes would not have been attained. With Lou's generosity, by the end of 1995, it is projected that nearly 700 individuals in the weights and measures community will have been trained in the new Handbook 133 Category A package checking procedures.

B. Martell, Chairman, Vermont
J. Bane, Iowa
C. Davis, Maine
C. Fulmer, South Carolina
W. Lagemann, Delaware
R. Philmon, Illinois
D. Wallace, Colorado

J. Mindte, NIST, Coordinator

Resolutions Committee

Report of the Nominating Committee

Thomas F. Geiler, Chairman
Director
Barnstable Consumer Affairs
Massachusetts

Reference
Key No.

800

The Nominating Committee met during the Interim Meeting at the Westin Hotel, Costa Mesa, California, and nominated the persons listed below to be officers of the 81st Conference. In the selection of nominees from active membership, consideration was given to professional experience, qualifications of individuals, Conference attendance and participation, and other factors considered to be important.

Two members of the committee were unable to be present during the meeting; members George Shefcheck and Lou Straub were consulted by way of conference call in reaching consensus. The following slate of officers was selected by unanimous vote of the Nominating Committee:

CHAIRMAN-ELECT:	Barbara J. Bloch, California
VICE-CHAIRMEN:	Michael Blacik, Minnesota Charles H. Carroll, Massachusetts Vernon Lee Massey, Shelby County, Tennessee Sharon Rhoades, Arizona
EXECUTIVE COMMITTEE:	Maxwell H. Gray, Florida Richard C. Suiter, Nebraska
TREASURER:	J. Alan Rogers, Virginia

T. Geiler, Barnstable, Massachusetts, Chairman

D. Guensler, California
S. Malone, Nebraska
A. Nelson, Connecticut
G. Shefcheck, Oregon
N. David Smith, North Carolina
L. Straub, Maryland

Nominating Committee

Report of the Auditing Committee

Monty H. Hopper, Acting Chairman
Kern County Weights & Measures
California

Reference
Key No.

900

The Auditing Committee met on Tuesday, January 9, 1995, during the NCWM Interim Meeting in Costa Mesa, California. The purpose of the meeting was to review the financial reports of the Conference Treasurer.

Chairman J. H. Eskew, Texas, and committee member Raymond Kalentkowski, Connecticut, were unable to attend the meeting. Darrell Guensler, California, and N. David Smith, North Carolina, graciously agreed to serve in their absence. The following persons were also in attendance:

- Charles A. Gardner, NCWM Treasurer
- Dr. Carroll S. Brickenkamp, NCWM Executive Secretary
- Ann H. Turner, Weights and Measures Coordinator
- J. Alan Rogers, Treasurer-Elect
- Harvey Lodge, Associate Membership Committee

The Auditing Committee finds the financial reports of the Conference Treasurer to be in order and correct, according to Conference procedure.

M. Hopper, Kern County, California

D Guensler, California
N. David Smith, North Carolina

J. Mindte, NIST, Technical Coordinator

Auditing Committee

Treasurer's Report

Trial Balance as of 12/31/94 - NCWM GENERAL ACCOUNT		
Income Accounts		
411.1	Annual Registration	\$50,315.00
411.2	Interim Registration	\$21,600.00
412.1	Government Member Fees	\$59,555.00
412.2	Associate Member Fees	\$69,335.00
413	Interest	\$2,605.92
416.9	Other - Industry CEU	\$9.00
416.9	Other - Miscellaneous	\$179.45
481.3	Receipts/Meeting Rooms	\$0.00
481.4	Joint Outgoing	\$2,485.00
482.4	NTP Modules	\$956.00
482.2	NCWM Publications	\$942.80
482.3	Videos - Sales	\$2,451.63
482.4	Handbook 133 3rd Edition	\$916.80
483	NTP Seminar	\$200.00
484.1	Advanced Metrology	\$3,600.00
485	Promotions	\$0.00
486	Grain Coop Agreement	\$4,645.32
Total Income		\$219,796.92

Trial Balance as of 12/31/94**Expense Accounts****511 - Annual**

511.1	Hotel/Food Services	\$23,794.81
514.2	Equipment/AV/Supplies	\$1,188.03
511.3	Personnel/Photo	\$2,140.35
511.3	Print/Copy	\$2,333.94
511.5	Awards	\$2,382.40
511.5	Treasurer Committee Expenses	\$1,111.50
511.7	Print Announcement	\$384.40
511.9	Miscellaneous	\$6,644.26
Total 511		\$39,979.69

512 - Interim

512.8	Hotel/Food Services	\$12,193.08
512.2	Equipment/Personnel/Printing/Misc.	\$0.00
512.3	Executive Committee	\$3,094.30
512.4	Laws and Regulations Committee	\$1,274.21
512.5	Specifications and Tolerances Committee	\$2,062.30
512.6	Education Committee	\$1,870.65
512.8	Liaison Committee	\$0.00
512.8	Other & Task Forces	\$1,758.59
512.9	Print Agenda	\$2,778.90
Total 512		\$25,032.03

513 - Committee Meetings

513.1	Executive Committee/Board of Governors	\$1,232.80
513.2	Laws and Regulations Committee	(\$558.89)
514.3	Specifications and Tolerances Committee	\$11,395.48
513.4	Education Committee	\$10,524.61
513.5	Liaison Committee	\$0.00
513.6	NTETC	\$0.00
513.7	Annual	\$2,271.78
Total 513		\$24,865.78

514 - Task Forces/Specific Committees

514.1	Privatization Task Force	\$4,611.84
514.2	Checkweigher Group	\$0.00
514.3	OIML	\$0.00
514.4	FPLA - Metric Work Group	\$0.00
514.5	USA/Canada Work Group	\$0.00
514.6	Petroleum Sub-Committee	\$880.76
514.7	ISO 90000 Task Force	\$0.00
	Other	\$0.00
Total 514		\$5,492.60

Treasurer's Report

515 Chairman/Chairman-Elect		
515.1	Chairman	\$11,728.50
516.2	Chairman-Elect	\$6,703.58
515.3	Chairman Breakfasts	\$0.00
Total 515	\$18,432.08	
516 - Administration		
516.1	Equipment/Supplies/Stat	\$ 684.08
516.2	Contracts/Personnel	\$16,446.50
516.3	Mail/P.O. Box	\$155.00
516.4	Treasury Bond	\$0.00
516.5	Bank Charges	\$63.63
516.6	National Training Program	\$2,287.21
516.9	Miscellaneous	\$50.00
Total 516	\$19,686.42	
517 - Printing/Publications		
517.1	Membership	\$1,732.00
517.2	NCWM Publications - Member	\$5,739.40
517.3	Consumer Pamphlet	\$0.00
517.4	Handbooks and Videos	\$0.00
517.9	Miscellaneous	\$16.00
Total 517	\$7,487.40	
518 - Train-the-Trainers		
518.1	Train-the Trainers	\$0.00
518.2	Training	\$0.00
Total 518	\$0.00	
581 - Special Events		
581.1	Annual	\$0.00
581.2	Interim	\$0.00
581.3	Recepts/Meetings	\$0.00
581.4	Joint Outing	\$0.00
Total 581	\$0.00	
582 - Publications		
582.1	Modules	\$1,567.55
582.2A	NCWM Publication 5	\$0.00
582.2B	NCWM Publication (other)	\$0.00
582.3	Videos	\$1,506.75
582.4	Handbook 133 3rd Edition	\$0.00
Total 582	\$3,074.30	
586	NTP Seminars	\$3,371.30
586	Grain Equipment Coop Agreement	\$9,780.04
Total 584-586	<b">\$13,151.34</b">	
Total Expenses	\$157,201.64	

Treasurer's Report

NCWM General Account		NCWM Bank Balances	
Start of Year Balance (NCWM General Acct. \$42,483.26 Signet Bank \$314.84)	\$42,798.10	EAB	\$105,076.54
Income	\$219,796.92	Signet	\$314.84
Expenses	\$157,201.64		
Current Balance	\$105,393.38	Current Balance	\$105,393.38

Trial Balance - Associate Membership Account - 12/31/94

Carry-over 1/1/94	Income	Expenses	Balance 12/31/94
\$12,748.29	\$30,366.59	\$21,996.50	\$21,118.38

Trial Balance - Grant II Account - 12/31/94

Carry-over 1/1/94	Income	Expenses	Balance 12/31/94
\$3,991.50	\$11,078.01	\$11,730.72	\$3,338.79

New Chairman's Address

Charles Gardner, Director Suffolk County, NY Weights and Measures

Hello everyone, and good morning. I am truly honored and privileged to be here today as your Chairman. I want to thank everyone for the many expressions of congratulations and offers of assistance that I have received - not only this past week but in the last several months as I have made my rounds as your Chair-Elect. I would like to say a word here about the process of the Chair-elect traveling around to the regional meetings and various industry meetings. This gave me the chance to meet many new people and to become acquainted with the issues and concerns of all of the country. It served to reduce my stress level and significantly reduce the apprehension that I would normally have experienced as I assume the role of your Chairman. Most of the credit for this idea goes to Tom Geiler and I would like to thank him on behalf of the Conference. It is a significant contribution to the improvement of the Conference.

I would also like to express my thanks and appreciation to all those past officers, committee members and chairmen, and industry representatives who, through their diligence, commitment and long hours, have ensured the creation and maintenance of our dynamic, ever-expanding and responsive Conference. The established policies and procedures of our Conference have proven to be structured enough so that issues and concerns of individuals and groups are addressed in a cohesive, consistent and evenly applied manner yet are still flexible enough to respond in a timely way to matters of urgency. It is because of their efforts that all of us are, today, a part of what I consider to be the best example in the world of a collaboration of government-industry-consumer interests working together towards a common goal - equity in the marketplace.

Are we perfect? No one is. Are we the best that we can be? There are many issues and concerns before us - there always are! It is what we thrive on! All organizations can improve and that has been one of our strengths - being responsive, dynamic and pro-active. We will continue to improve.

Part of that improvement most certainly will be as a result of the efforts of the Long Range Planning Group which was initiated last spring. I have asked Dave Smith and Tom Geiler to continue to provide the stewardship for this effort. I have asked them to assist the Executive Committee and intensify their efforts so that, by the 1996 Interim Meeting, we will have a long range plan in place. Gil Ugiansky agrees that this is a priority for our Conference and I am confident that the Office of Weights and Measures will provide the guidance and assistance that we need. What is our goal? Who are our customers? What are our priorities? The most critical year for the success of this group is this - the first year. I have the confidence that Tom and Dave will help to provide the Executive Committee with a strong foundation for what will ultimately become a permanent part of the structure of our Conference.

My theme for our Conference for the year is "Sharing Information, Delivering Equity." We need to continue the efforts to develop a National Data Sharing Network. We have an enormous amount of data. We need to develop a vehicle for sharing and delivery of that data. We need to automate our field staffs. Our Conference should provide a means of support and delivery of information to all, and also to provide the assistance on how to share and use the data. We must expand and strengthen our training capabilities. We need to continue hands-on, in-the-field training. We must insure that when we train the trainers, they continue the process and deliver that training to the field. Our Conference must be able to share the tremendous institutional knowledge that we possess.

I look forward to the Conference benefitting from the new leadership at OWM. I sense an increasing realization at NIST that the OWM/NCWM collaboration is a cornerstone of the marketplace in the United States. To our benefit, I also believe that this view is shared by many outside of our Conference, including those who control the "purse strings." The technical staff at OWM is tremendously competent. They have been reinvigorated and we look forward to their support and assistance. They truly have the best interests of our Conference in mind in all that they do.

It remains up to us to deliver. For me to be successful, for our Conference to be successful, I challenge everyone here to work within the Conference. Bring your ideas and concerns to the Conference. Speak up and be heard. Talk to each other, talk to the Chairman, talk to the Committee members, and most of all, promote the Conference after you leave here. Use what you learn here and make it a year-round commitment; not a one-shot, one-week occurrence.

My father once told me that, if you want to be seen - Stand Up! If you want to be heard - Speak Up! If you want to be appreciated - Sit Down! And that is what I am going to do. Thank you all very much and I look forward to the coming year with a great deal of anticipation and pride.

NCWM 80th Annual Meeting**Portland, Maine****July 16-20, 1995***List of Participants*

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